Vol. 888 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT OFFICE

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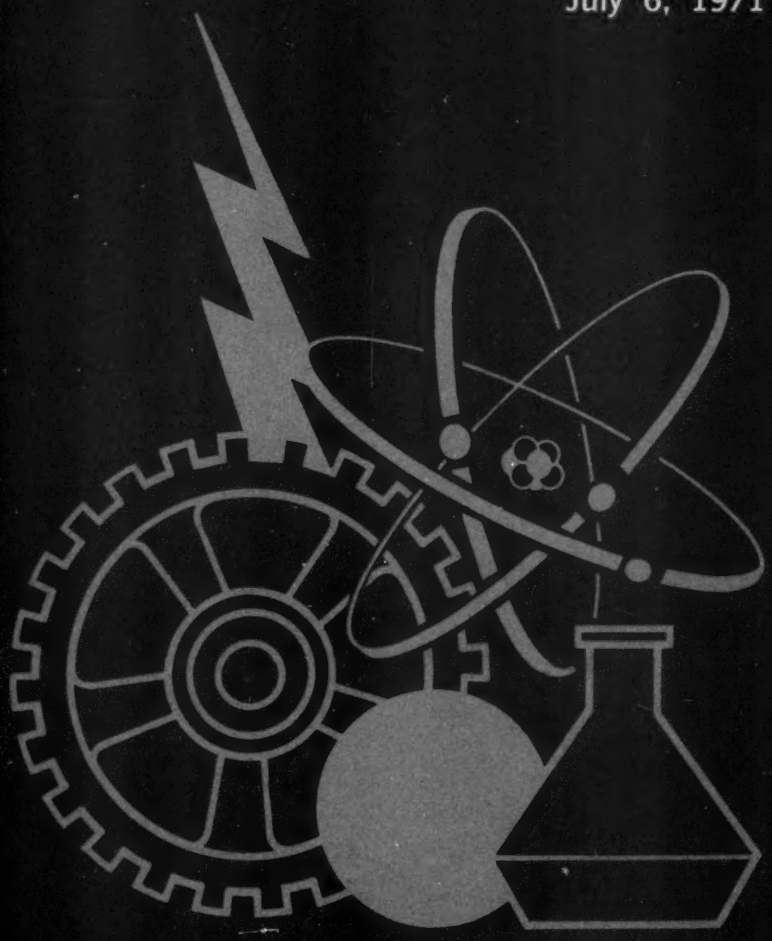
PATENTS

July 6, 1971



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

July 6, 1971 Volume 888 Number 1

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PATENT OFFICE NOTICES

Environmental Quality

The National Environmental Policy Act declares that it is a continuing policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act further directs that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policy set forth in the Act.

Following the enactment of the National Environmental Policy Act, the Patent Office initiated an Environmental Quality Program under which it accorded, upon request, "special" status to all patent applications for inventions which materially enhance the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements—air, water, and soil.

It seems apparent that not all patent applicants are aware of the availability of such special handling under the program. While over 381 patent applications have already been approved for accelerated processing by the Patent Office, a substantial number of patent applicants whose inventions would qualify have not requested special status for their patent applications.

In order to participate in the program, applicants must request that their applications be accorded "special" status in writing, identifying the applications by serial number and filing date, and should submit affidavits or declarations under Rule 102 explaining how their inventions contribute to the restoration or maintenance of one of the three life-sustaining elements mentioned.

ROBERT GOTTSCHALK,
June 7, 1971. *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,441,960, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; **Re. 24,165,** same, **filed** Oct. 18, 1961, D.C. Md. (Baltimore), Doc. 13358–C, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Inc.* v. *Martin-Marietta Corporation.* **Same, filed** Sept. 21, 1962, D.C. Md. (Baltimore), Doc. 14084–C, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Inc.* v. *Westinghouse Electric Corporation.* **Same, filed** Dec. 19, 1962, D.C. Md. (Baltimore), Doc. 14299–C, *Technograph Printed Circuits, Ltd. and Technograph and Telegraph Corporation* v. *International Telephone & Telegraph Corp.* **Same, filed** Jan. 28, 1963, D.C. Md. (Baltimore), Doc. 14374–C, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Inc.* v. *McDonnell Aircraft Corporation.* Motion and order on above suits, cases dismissed with respect to said patents, Dec. 23, 1970.

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Feb. 24, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70–C–101, *George H. Butterfield, Sr.* v. *Wisconsin Optical Service, Inc.* Record sent to the N.D. of Ill. (Chicago), Apr. 10, 1970. **Same, filed** Mar. 3, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70–C–119, *George H. Butterfield, Sr.* v. *Ray-Con, Inc.* Case transferred to the U.S. Dist. Court, N.D. of Ill. (Chicago), Apr. 10, 1970. **Same, filed** Oct. 22 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2185, *George H. Butterfield, Sr.* v. *Fused Kontacts of Chicago, Inc.* Stipulation order, action dismissed with prejudice, Rule 41(a)(1) of F.R.C.P., Dec. 14, 1970.

2,617,705, Coombs and Tompkins, DATA STORAGE APPARATUS; **2,629,827,** Eckert, Jr. and Mauchly, MEMORY SYSTEM, **filed** Nov. 30, 1970, U.S. Ct. of App., 4th Cir., Virginia (Richmond), Doc. 15,320 and 15,321, *Iowa State University Research Foundation, Inc.* v. *Control Data Corporation.*

2,629,827. (See 2,617,705.)

2,653,526, W. E. Peery, PRINTING SYSTEM FOR PHOTOCOMPOSING MACHINES OR THE LIKE; **2,787,654,** same, ELECTRONIC PHOTO-TYPE-COMPOSING SYSTEM, **filed** Aug. 7, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1961, *Compugraphic Corporation* v. *Eltra Corporation and Logan Square Typographers.* Judgment by consent, plaintiff owner of patents, said patents are valid and infringed, Dec. 16, 1970.

2,685,954, T. H. Curtis, PROCESSING MACHINE; **2,709,512,** same, **filed** Dec. 4, 1969, D.C. Del. (Newark), Doc. 3818, *Kewanee Oil Company* v. *M & T Chemicals, Inc.* Stipulation and order, dismissed without prejudice, pursuant to Rule 41(a)(1)ii, Jan. 14, 1971.

2,709,512. (See 2,685,954.)

2,787,654. (See 2,653,526.)

2,790,362. (See 3,332,617.)

2,841,394, A. R. Stobb, COLLECTOR FOR FLEXIBLE SHEETS; **2,933,313,** same, METHOD AND MEANS FOR COLLECTING FLEXIBLE SHEETS; **3,188,082,** same, APPARATUS AND METHOD FOR COLLECTING FLEXIBLE SHEETS, **filed** Dec. 24, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3227, *Stobbs, Inc., Western Printing & Lithographing Co.* v. *Newton Christmas and Industrial Design & Engineering, Inc.*

2,905,465, Armstrong and Wiener, CARD PROCESSING APPARATUS; **2,985,299,** Wiener and Wilcon, same; **2,997,173,** Nelson, Stern and Wiener, same; **3,032,750,** Nelson and Redondo, same; **3,173,129,** Hayes and Stalder, same; **3,016,140,** Peck and Wilson, same; **3,039,681,** Nelson and Stern, same, **filed** May 31, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c1001, *The Magnavox Company* v. *The National Cash Register Company, C. P. Clare & Company.* (The amended complaint deleted Patent 3,005,632.) Order, action dismissed as moot, Dec. 21, 1970.

2,922,883, E. C. Giaimo, Jr., ELECTROSTATIC CHARGING MEANS AND METHOD; **3,052,540,** H. G. Greig, DYE SENSITIZATION OF ELECTROPHOTOGRAPHIC MATERIALS; **3,052,539,** same, ELECTROSTATIC PRINTING, **filed** Mar. 5, 1965, D.C., S.D.N.Y., Doc. 65–C–686, *SCM Corporation* v. *Radio Corporation of America.* Final judgment, Patents 3,052,539, 3,052,540 and 2,922,883, each and every claim is invalid; defendant RCA is permanently enjoined. First counterclaim of RCA is dismissed with prejudice on the merits and each of the 2nd and 3rd causes of action of plaintiff SCM Corp. is dismissed with prejudice on the merits, Dec. 11, 1970.

2,931,532, R. H. Gapp, RIVETS AND METHOD OF RIVETING; **3,285,121,** G. Siegol, BLIND RIVET, **filed** Jan. 15, 1971, D.C., S.D. Ohio (Cincinnati), Doc. 7827, *Olympic Fastening Systems, Inc.* v. *Textron, Inc.* **Same, filed** Jan. 15, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–125 WPG, *Olympic Fastening Systems, Inc.* v. *Textron, Inc.*

2,933,313. (See 2,841,394.)

2,985,299. (See 2,905,465.)

2,997,173. (See 2,905,465.)

3,016,140. (See 2,905,465.)

3,032,750. (See 2,905,465.)

3,039,681. (See 2,905,465.)

3,052,539. (See 2,922,883.)

3,052,540. (See 2,922,883.)

3,080,264, Zimmie and Bloecher, METHOD OF REMOVING SILT FROM TANKS; **3,085,916,** METHOD OF REMOVING AND PREVENTING ACCUMULATION IN COOLING SYSTEMS, **filed** Jan. 7, 1971, D.C., S.D. Ohio (Cincinnati), Doc. 7819, *W. E. Zimmie, Inc.* v. *Ohio Valley Chemical Corp. and Charles J. Kennedy.*

3,085,916. (See 3,080,264.)

3,173,129. (See 2,905,465.)

3,188,082. (See 2,841,394.)

3,285,121. (See 2,931,532.)

3,332,617, Higonnet and Moyroud, TYPE COMPOSING APPARATUS; **2,790,362,** same, PHOTO COMPOSING MACHINE, **filed** Sept. 16, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2278, *Photon, Inc.* v. *Compugraphic Corp. and Ottawa Publishing Co.*

3,483,617, J. Krampe, TOOL FOR CUTTING AND STRIPPING CABLE, **filed** Jan. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c47, *Josef Krampe* v. *Ideal Industries, Inc.*

3,535,927, Mahon and McMurtrie, COMPENSATED THERMISTOR SENSOR, **filed** Dec. 29, 1970, D.C.N.J. (Newark), Doc. 1746–70, *Fischer & Porter Company v. Eastech, Inc. et al.*

Re. 24,165. (See 2,441,960.)

D. 211,018, D. D. Granger, CHAIR OR SIMILAR ARTICLE; **D. 211,633,** same, SIDE PANELED CHAIR OR SIMILAR ARTICLE; **D. 211,785,** same, WINGED ARMCHAIR OR SIMILAR ARTICLE; **D. 211,786,** same, CHAIR OR SIMILAR ARTICLE, **filed** Sept. 6, 1968, D.C., W.D.N.C. (Charlotte), Doc. 2391, *Maxwell Royal Chair Company v. Clayton Marcus Company, Inc.* Consent judgment, Design Patents valid and owned by plaintiff; defendant enjoined, Jan. 6, 1971.

D. 211,633. (See D. 211,018.)

D. 211,785. (See D. 211,018.)

D. 211,786. (See D. 211,018.)

Patent Application Branch Service

In order to expedite the processing of newly filed applications, improve the efficiency of the Office, and assist in the effort to normally dispose of patent applications within 18 months of their filing date, cooperation from the patent community is solicited with respect to recent procedural modifications.

Prior to examination concerning patentability, patent applications are now examined for compliance with formal requirements, and actions are mailed requiring correction of stated informalities. Many inquiries have arisen concerning the effect of such actions. Since the actions concerning correction of informalities include the setting of a period for response, failure to respond within the period set results in abandonment of the application.

Inquiries directed to the Application Branch, either in person or by telephone, concerning patent applications should not be made during the morning hours between 8:30 and 10:30.

The letter of transmittal accompanying the filing of continuing applications, particularly streamlined continuations and Rule 147 divisionals, should include such additional information as the identification by serial number of the parent application, its status, and location in the Patent Office. The supplying of this information will permit the processing of these new applications more rapidly than at present.

When a new application is filed with a request to transfer drawings under Rule 88, the application papers should include drawing prints to enable the Application Branch to process the case before transfer of the formal drawings is effected.

June 1, 1971. RICHARD A. WAHL,
Assistant Commissioner.

Certificates of Correction for the Week of July 6, 1971

Re. 27,071	3,547,118	3,560,137	3,565,869
3,432,302	3,547,500	3,560,176	3,565,924
3,438,773	3,547,946	3,560,536	3,566,095
3,477,380	3,549,110	3,560,604	3,566,529
3,481,087	3,549,498	3,560,635	3,566,887
3,494,377	3,549,784	3,561,093	3,567,222
3,495,024	3,549,845	3,561,750	3,567,283
3,503,959	3,551,105	3,562,176	3,567,287
3,509,265	3,551,441	3,562,352	3,567,761
3,510,424	3,552,041	3,562,473	3,567,815
3,510,749	3,552,601	3,562,499	3,568,167
3,522,281	3,553,678	3,562,521	3,568,559
3,522,749	3,554,523	3,562,574	3,568,588
3,523,828	3,554,547	3,562,650	3,568,709
3,528,909	3,554,804	3,562,778	3,568,939
3,530,111	3,554,935	3,563,274	3,569,754
3,531,632	3,555,493	3,563,351	3,570,667
3,531,909	3,555,515	3,563,402	3,571,941
3,536,826	3,556,040	3,563,464	3,572,121
3,537,390	3,556,069	3,563,734	3,572,491
3,538,099	3,557,120	3,564,585	3,572,693
3,541,145	3,557,350	3,564,658	3,572,711
3,541,794	3,557,860	3,564,903	3,573,397
3,541,876	3,557,927	3,565,118	3,573,894
3,542,780	3,558,536	3,565,266	3,574,546
3,543,836	3,558,683	3,565,277	3,574,835
3,543,844	3,558,893	3,565,296	3,575,515
3,544,577	3,559,130	3,565,420	
3,544,733	3,559,190	3,565,449	
3,545,266	3,559,652	3,565,793	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 15, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-22-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-01-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-17-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 150—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	4-09-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	10-01-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-20-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-01-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-02-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	2-17-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	6-23-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	5-01-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-02-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-03-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	7-09-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-03-70

Expiration of patents: The patents within the range of numbers indicated below expire during June 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,679,645 to 2,682,657, inclusive
Plant Patents..... Numbers 1,282 to 1,287, inclusive

REISSUES

JULY 6, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,152

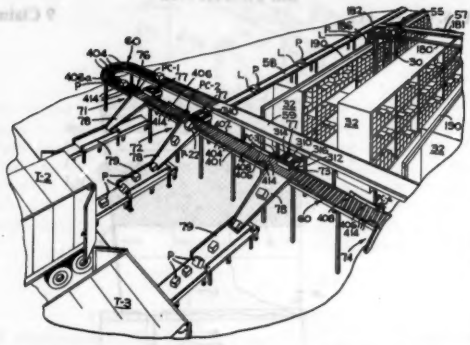
METHOD OF SELECTING A PLURALITY OF ARTICLES IN A WAREHOUSE

Stanley M. Weir, Palo Alto, Calif., assignor to FMC Corporation, San Jose, Calif.

Original No. 3,424,324, dated Jan. 28, 1969, Ser. No. 705,247, Nov. 3, 1967, which is a division of Ser. No. 530,057, Feb. 25, 1966, now Patent No. 3,379,321, dated Apr. 23, 1968. Application for reissue Oct. 2, 1970, Ser. No. 77,681

Int. Cl. B65g *1/06*

U.S. Cl. 214—152 10 Claims



A method of selecting a plurality of articles in a warehouse with storage bins therein, for filling orders, by using a separate label for each article to be picked, recording data on each label indicative of the quantity of articles to be picked, the location of the article in the warehouse and the destination of the picked articles. A label is attached to each article at the location recorded on the label.

27,153

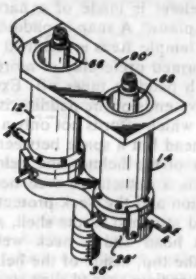
GLASS FORMING APPARATUS WITH SELF-ACCOMMODATING AND UNIVERSAL PLUNGERS

Joseph W. Donnelly, Vineland, N.J., assignor to Maul Brothers, Inc., Millville, N.J.

Original No. 3,323,891, dated June 6, 1967, Ser. No. 573,125, Aug. 17, 1966, which is a continuation of Ser. No. 411,889, Nov. 17, 1964, which in turn is a continuation-in-part of Ser. No. 51,829, Aug. 25, 1960. Application for reissue May 6, 1969, Ser. No. 830,894

Int. Cl. C03b *11/00, 11/06*

U.S. Cl. 65—167 2 Claims



Glass forming apparatus wherein a pair of plunger castings are free floating so that the plungers within the casings which form the glassware may be individually self-accommodating with respect to their respective molds. The plungers are universal so that they may be used regardless of the size of the mold cavity in the apparatus.

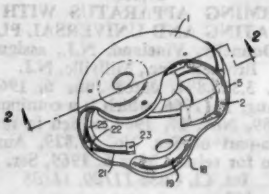
5

PATENTS

GRANTED JULY 6, 1971

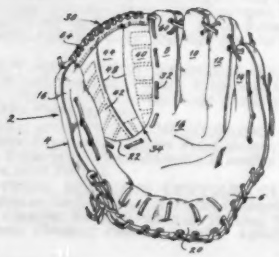
GENERAL AND MECHANICAL

3,590,388
ATHLETIC HELMET
Mike C. Holt, c/o Southern Athletic Service Inc., P.O. Box 46, Leesburg, Fla.
Filed Feb. 4, 1969, Ser. No. 796,336
Int. Cl. A42b *1/08, 3/00*
U.S. Cl. 2—3 **4 Claims**



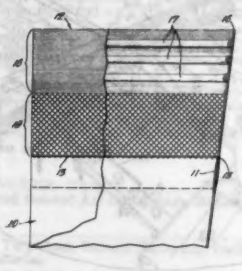
The athletic helmet is made of a hard, strong material, such as a molded plastic. A snap-in padding corresponding to the forehead and temple areas is attached to the inside of the helmet. This is formed preferably of more than one section, the ends of which padding taper off. Extending rearwardly from the respective ends of the padding is a head suspension of web structure, which affords not only a good fit of the helmet to wearer's head but a space between the latter and the shell. At the rear of the helmet and below the level of the head suspension is a detachable web neck protector. Both the head suspension and the neck protector are formed of a chordal web band attached to the shell, and attached to the chordal bands a head and a neck web contacting band respectively. At the top, inside of the helmet is a soft crown piece from which radiate spaced sling straps of the same soft material which are attached to the shell between the latter's inside surface and the chordal head band.

3,590,389
BALL GLOVE BACKSTOP
Roland N. Latina, Belleville, Ill., assignor to Rawlings Sporting Goods Company, St. Louis, Mo.
Filed Jan. 23, 1970, Ser. No. 5,231
Int. Cl. A41d *13/10*
U.S. Cl. 2—19 **10 Claims**



A ball glove having spaced finger and thumb sections with a backstop connected to and substantially closing the area between those sections. The backstop includes a pair of spaced side segments which are joined to a connecting segment at bellowslike folds. The folds permit the connecting segment to move rearwardly with respect to the side segments when a ball strikes the backstop and, in addition, enables the side segments to spread away from the connecting segment. This displacement between the segments permits the backstop to more closely conform to the shape of a ball which enters it, and to expand upon ball impact which absorbs some of the energy. It also allows the segments to work relative to each other, which affords greater control over the glove and enhances its retention capabilities.

3,590,390
ANCHOR TAPES
Robert C. Howard, Wyomissing, Pa.; Erika H. M. Kelly, West Lafayette, Ind., and Oliver N. Seelig, Wyomissing Hills, Pa., assignors to Wyomissing Corporation, Reading, Pa.
Continuation of application Ser. No. 593,866, Nov. 14, 1966, now abandoned. This application Mar. 4, 1969, Ser. No. 804,253
Int. Cl. A41f *9/02*
U.S. Cl. 2—312 **9 Claims**



This application discloses a tape particularly adapted to be secured to extend beyond the free marginal edge of clothing and similar items to anchor them relative to the underlying surface. The tape comprises a strip of elastic fabric having stretch in at least one direction, and beads of elastomeric material physically bonded to the strip by depositing the material in fluid state upon the strip and drying and curing it in situ into a predetermined form.

3,590,391
WIRE TWISTING DEVICE
Roy H. Winegar, Runnells, Iowa
Filed Feb. 20, 1969, Ser. No. 800,947
Int. Cl. B21f *15/04*
U.S. Cl. 140—119 **8 Claims**

A device including a pair of wheel half sections having teeth on their outer peripheral edges and concentric guide

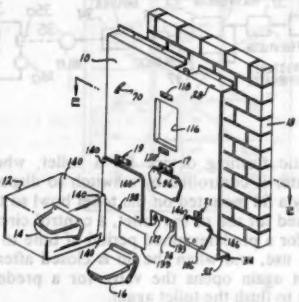
races on opposite faces in which a pair of scissorslike levers engage races on opposite sides thereof through semicylindrical guide portions. A third lever has a pair of semicylindrical guides received in races on opposite sides of the wheel. Spring biased dog elements are provided on the levers for engagement with the teeth on the wheel and as the levers are worked back and forth the wheel is rotated and wires or the like extending along the diametrical center thereof are twisted by a pin carried by one of the wheel half sections and limited against movement by the other wheel half section.

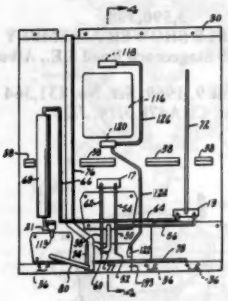
3,590,392

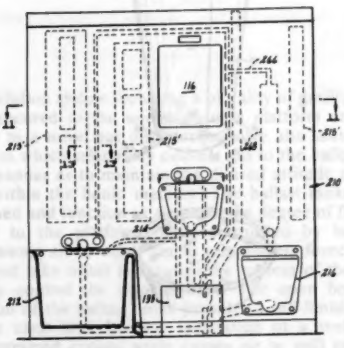
PREFABRICATED BATHROOM ASSEMBLY

Milton B. Hollander, Stamford, Conn.; Victor Buell, Briarcliff Manor, and Norman B. Judelson, Hartsdale, both of, N.Y., assignors to American Standard Inc., New York, N.Y.

Filed June 12, 1968, Ser. No. 736,319
Int. Cl. A47k *4/00*
U.S. Cl. 4—2 **10 Claims**







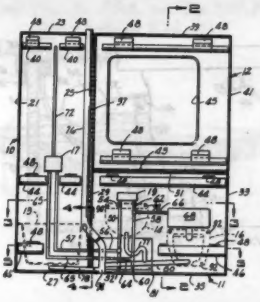
This invention proposes a prefabricated bathroom component built on the order of an appliance such as a clothes washer or dishwasher so that it may be plugged into place in a matter of minutes, as opposed to hours or days. The concept is to build the bathroom appliance as one single preplumbed panel which can be set against an unfinished bathroom wall and bolted or otherwise secured in place with a minimum of time and effort. This enables the operations requiring skilled effort and know-how to be performed at the factory where precision equipment is available to make low cost mass production operations most feasible.

3,590,393

PREFABRICATED BATHROOM ASSEMBLY

Milton B. Hollander, Stamford, Conn.; Victor P. Buell, Briarcliff Manor, and Norman B. Judelson, Hartsdale, N.Y., assignors to American Standard Inc., New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,484
Int. Cl. A47k *4/00*
U.S. Cl. 4—2 **7 Claims**



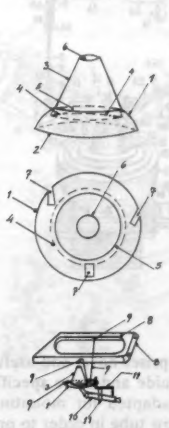
This invention proposes a prefabricated bathroom component built on the order of an appliance such as a clothes washer or dishwasher so that it may be plugged into place in a matter of minutes, as opposed to hours or days. The concept is to build the bathroom appliance as a number of preplumbed panels which can be set against an unfinished bathroom wall and bolted or otherwise secured in place with a minimum of time and effort. This enables the operations requiring skilled effort and know-how to be performed at the factory where precision equipment is available to make low cost mass production operations most feasible.

3,590,394

ANTISPLASH DEVICE

Ernst Olof Andersson, Radhusgatan 14, S-827 00, Ljusdal, Sweden

Filed Apr. 1, 1969, Ser. No. 812,245
Claims priority, application Sweden, Apr. 1, 1968, 4325/68
Int. Cl. A47k *3/22*
U.S. Cl. 4—7 **7 Claims**



An antisplash device for use in conjunction with a douching or rinsing apparatus includes a substantially conical

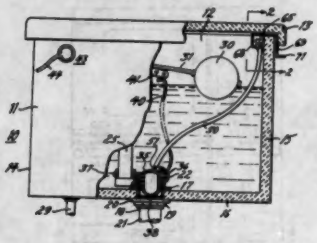
or frustoconical hollow shell member received in an upper opening in a guard ring in the form of a section of a sphere. The inner concave surface of the shield member controls and guides the water issuing from the douching apparatus while the outer surface thereof cooperates with the guard ring to prevent slashing of returning used water and to shield the fresh water from this used water.

3,590,395

TOILET TANK FLUSH VALVE APPARATUS

William E. Wustner, 421 Sylvania Ave., Glenside, Pa.

Filed July 8, 1969, Ser. No. 839,958
Int. Cl. E03d 1/34
U.S. Cl. 4—56 2 Claims



An adjustable toilet tank flush valve apparatus is provided wherein the discharge of water from the tank is controlled by setting a control member connected to the flush valve whereby the flush valve buoyancy is selected to permit of full or partial tank discharge.

3,590,396

WATER CONTROL DEVICE

Michael Graziosi, 383 Second Street, Jersey City, New Jersey, Hudson County, N.J.

Filed May 31, 1968, Ser. No. 733,578
Int. Cl. E03d 1/34
U.S. Cl. 4—57 5 Claims

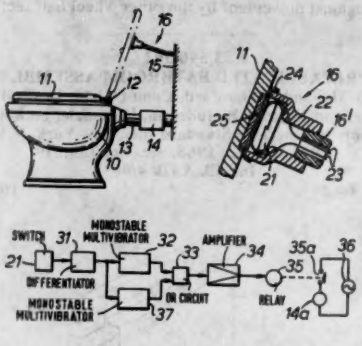
The invention comprises novel and useful improvements in an automatic flush guide and more specifically pertains to a guiding attachment adapted for mounting in a toilet flush tank upon the overflow tube in order to provide an improved guiding means and therefor by enhancing the efficiency of operation of the flush valve ball member.

3,590,397

AUTOMATIC FLUSHING DEVICE FOR TOILET FACILITIES

Hiroo Akamatsu; Saburo Takechi, and Masuo Ichimori, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed June 20, 1969, Ser. No. 835,156
Int. Cl. E03d 13/100
U.S. Cl. 4—100 6 Claims



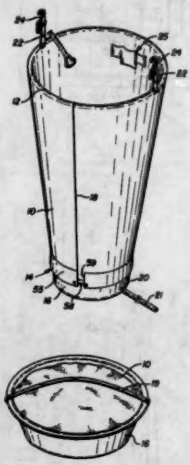
An automatic flushing device for a toilet, wherein the flushing of water is controlled by a switch so disposed as to be actuated by a lid mounted on the toilet bowl so that when the lid is opened for use of the toilet, a control circuit opens a flush valve for a predetermined period of time to flush the toilet prior to use, and when the lid is closed after use, the control circuit again opens the valve for a predetermined period of time to flush the toilet again.

3,590,398

PORTABLE SHOWER ASSEMBLY

Harold M. Jetter, 605 Stagecoach Road S.E., Albuquerque, N. Mex.

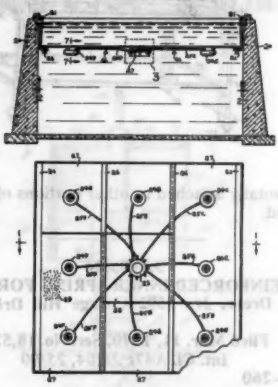
Filed June 9, 1969, Ser. No. 831,364
Int. Cl. A47k 3/14, 3/23
U.S. Cl. 4—154 3 Claims

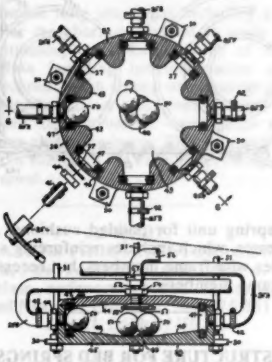


A portable shower assembly having a rigid circular base with a short upstanding sidewall and a top lip includes a circular curtain outwardly tapered from bottom to top with a

flexible ring securing the curtain to the base in a leak-proof connection, and a top ring for securing the curtain in open position for use. By using flexible rings the curtain folds into the base for storage.

3,590,399
ATTITUDE CONTROLLED FLOTATION SYSTEM
Bernard G. Madden, 860 Valley View Road, Flourtown, Pa.
Filed Oct. 14, 1969, Ser. No. 866,196
Int. Cl. E04h *3/19*
U.S. Cl. 4—172.13 **11 Claims**



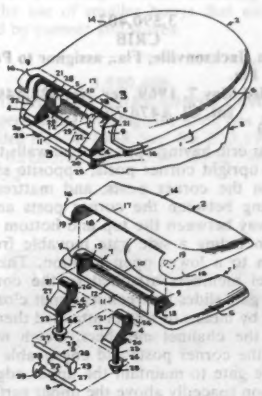


A flotation system including a plurality of gas/liquid ballast tanks secured to the underside of a platform and all connected to a novel gas distribution valve also secured to the platform which selectively delivers gas to the ballast tanks in such manner as to maintain the desired attitude of the platform within the liquid medium. The ballast tanks are open bottomed and function as air traps, the degree of flotation afforded to the platform being controlled by injecting or withdrawing air or other gas to respectively force water out from and take water in through the bottom of the tank and thereby control the displacement. The open bottom construction of the ballast tanks provides a self-limiting tilt feature to each tank because inclination of a tank above a predetermined critical angle causes air to spill out through the bottom and limit the flotation. The valve is a novel type of ball check valve and provides attitude control by automatically selectively controlling the ratio of gas to liquid within each ballast tank through the check ball feature, while elevation control is effected by simultaneously changing the ratio of gas to liquid in all ballast tanks. The control valve is formed with a plurality of ports spaced peripherally about the sidewall of the valve body. The upper surface of the valve body bottom wall is provided with a central horizontal platform region disposed at a level below that of each of the ports, from which the floor extends radially outward and slopes upward toward the ports. A plurality of spherical balls are seated on the central platform when the latter is in a horizontal position, and when the valve body is tilted are free to roll outward and block any of the ports disposed at a lower elevation than the central platform. The mechanism may be adjusted to provide a slope to the platform or other controlled device where such an arrangement is desired.

3,590,400
SWIMMING POOL COPING
Frank L. Kessler, 17 Vassar Road, Broomall, Pa., and Stephen F. Kendall, 536 Sprague Road, Penn Valley, Pa.
Filed May 28, 1969, Ser. No. 828,493
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.21 **2 Claims**

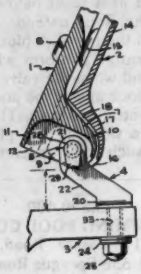
The disclosure relates to a swimming pool which is prefabricated and is assembled on site from the component parts. The shell of the pool containing the water during use is formed from a flexible inner liner which is attached to the sides of the pool. The construction also includes a one-piece coping which is placed around the deck of the pool and at the inner edge thereof in order to give the pool a rectilinear appearance despite the bowing caused by outward pressure exerted on the pool walls by the water within the pool.

3,590,401
TOILET SEAT AND HINGE ASSEMBLY
William O. Brown, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Miss.
Filed Feb. 10, 1970, Ser. No. 10,470
Int. Cl. A47k *13/12*
U.S. Cl. 4—236 **6 Claims**



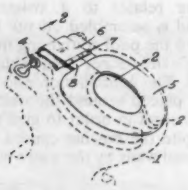
A toilet seat and cover assembly wherein the pivot axis in the seat is a considerably greater distance above the seat bottom than from the plane of the seat back edge, so that the

back edge of the seat will be spaced a substantial distance above the top surface of a toilet bowl upon which the seat is mounted, when the seat is swung about its pivot to an upright



position. The seat, cover and hinge posts are pivotally connected by removable hinge pins having yieldable means to prevent accidental displacement.

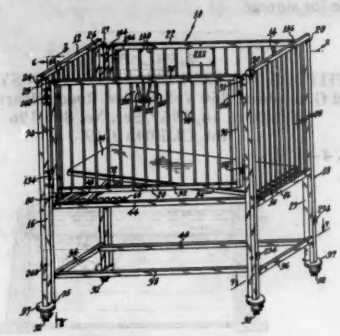
3,590,402
AUXILIARY TOILET SEAT
Clifford R. Penley, Rte. 410, Box 923, Newsome Road, Salisbury, N.C.
Filed Oct. 4, 1968, Ser. No. 765,094
Int. Cl. A47k *13/06*
U.S. Cl. 4—239 **1 Claim**



For use of young children an auxiliary toilet seat is pivotally mounted above the main seat and below the lid. Then, the main seat may be lowered to rest on the stationary toilet bowl, and the auxiliary seat may be lowered onto the main seat when desired, and the lid may be lowered to cover both seats when desired.

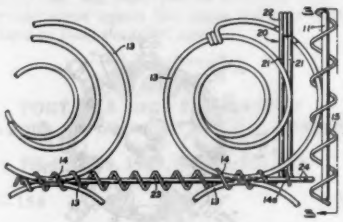
3,590,403
CRIB
Clyde E. Mixon, Jacksonville, Fla., assignor to Pedicraft, Inc., Jacksonville, Fla.
Filed May 7, 1969, Ser. No. 822,449
Int. Cl. A47d *7/00, 9/00*
U.S. Cl. 5—100 **17 Claims**

A rectangular crib having opposite end walls terminated by four generally upright corner posts, opposite sidewalls positioned between the corner posts, and mattress supporting means extending between the corner posts and positioned generally midway between the top and bottom thereof, with one sidewall including a side gate movable from an upper closed position to a lower open position. The crib has U-shaped channel members attached to the corner posts in which the side gate slides between its upper closed and lower open positions by means of rollers attached thereto and positioned within the channel members. Catch means are included within the corner posts and engageable with the rollers on the side gate to maintain the upper edge of the side gate in a position spacedly above the upper surface of a mattress positioned on the mattress supporting means to provide a short sidewall portion for the side gate to prevent the accidental falling of a child from the crib. The crib additionally has selectively releasable means positioned within and adjacent to the upper portion of the side gate for maintaining the same in its upper closed position. The crib is provided with a mattress supporting member which is raisable at one



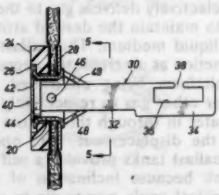
end and pivotally attached to other portions of the crib at its opposite end.

3,590,404
EDGE-REINFORCED INNER SPRING FOR CUSHIONS
Wendel E. Dreve, Jr., 1592 College Hill Drive, Columbus, Ohio
Filed Mar. 11, 1970, Ser. No. 18,520
Int. Cl. A47c *23/04, 25/00*
U.S. Cl. 5—260 **4 Claims**



An inner spring unit for padded cushions, such as inner spring mattresses, which includes reinforcing springs for the edge or border wire frame members, but recessed to the unit within said frame members.

3,590,405
HANDLE STRUCTURE FOR BED SPRINGS AND THE LIKE
Edward O. Kerr, Houston, Tex., assignor to Ther-A-Pedic Associates, Inc.
Filed Mar. 27, 1969, Ser. No. 811,182
Int. Cl. A47c *23/00*
U.S. Cl. 5—345 **4 Claims**



A handle for bed springs of the inner spring mattress type. The handle structure includes a straplike handle member and handle connector elements adapted to be extended through openings adjacent the ends of the member and through

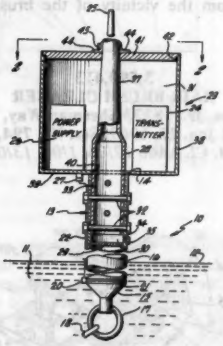
spaced apart grommets in the mattress cover, and a connecting member engageable with springs of the mattress and to which the connector elements may be connected to secure the handle to the springs. The connecting member is designed to enable the handle to be used with bed springs having springs of different sizes or which are spaced apart at different distances.

3,590,406

LONG SPAR BUOY

George S. Lockwood, Jr., Carmel Valley, and Klemme M. Jones, San Pedro, both of, Calif., assignors to Global Marine Inc., Los Angeles, Calif.

Filed May 22, 1968, Ser. No. 731,156
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 5 Claims



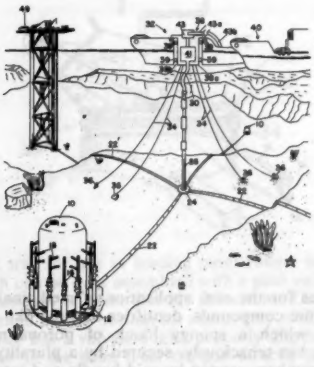
An oceanographic long spar buoy including a plurality of elongated tubular members connected to each other in an end-to-end relationship to define a body of the buoy. A weatherproof data handling instrumentation container is demountably secured to an upper unsubmerged end of the body. The instrumentation container houses equipment which is coupled to instrument transducers mounted at selected locations along the buoy. The container is removable as a unit from the buoy for ease of servicing or repair of the contents thereof.

3,590,407

SWIVEL TANKER FLOATING STORAGE SYSTEM

Vintila Bratianu, New York, N.Y., and Lewis A. Rupp, Wellesley Hills, Mass., assignors to Mobil Oil Corporation

Filed Nov. 13, 1968, Ser. No. 775,351
Int. Cl. B63b *21/50*
U.S. Cl. 9—8 1 Claim



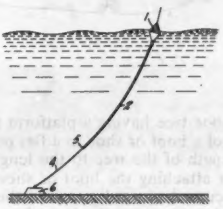
The specification discloses a fluid storage system which includes a floating storage vessel having a swivel assembly mounted in its bow structure. The stationary core of the swivel assembly is moored to the water bottom by means of anchor lines extending through hawse tubes, while the storage structure is free to pivot about the stationary core in response to the combined forces of wind and water. Mounted centrally in a hollow portion of the stationary core of the swivel assembly is a liquid-gas separator unit. The liquid and gas outputs of the separator unit pass through swivel joints to the storage tanks of the floating structure. The separator unit comprises a main pressure vessel and a surge vessel which absorbs shock loads from the riser flowlines.

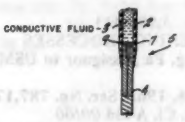
3,590,408

ANCHORING DEVICE FOR A FLOATING BUOY

Cornelis M. Verhagen, Heemstede, Netherlands, assignor to Datawell N.V., Haarlem, Netherlands

Filed Feb. 24, 1969, Ser. No. 801,849
Claims priority, application Netherlands, Mar. 1, 1968, 6,803,005
Int. Cl. B63b *21/52*; H01b *1/00, 7/06*
U.S. Cl. 9—8 3 Claims





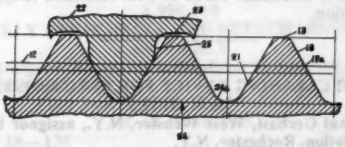
The invention relates to an anchoring means for connecting a buoy with a fixed point below the water surface, which anchoring means contains at least over part of its length an elongated elastic member that can be elongated over 100 percent and consists of natural rubber mixed with polybutadiene and/or a plasticizer, and is able to withstand at least 30,000 elongations of more than 100 percent without tearing or breaking. The anchorage means according to the invention enables the use of smaller buoys that nevertheless are not submerged by current and waves.

3,590,409

METHOD OF THREAD ROLLING

Emric W. Bergere, 2324 Nottingham Ave., Los Angeles, Calif.

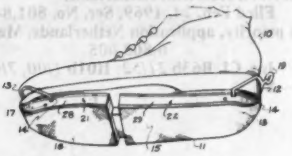
Filed Nov. 4, 1968, Ser. No. 773,192
Int. Cl. B21h *3/02, 3/04, 3/08*; B23g *7/00, 9/00*
U.S. Cl. 10—152 2 Claims



A method of forming threads on ultra high strength metal alloys by preforming the threads in the annealed condition while allowing a segment of material below the pitch diameter to be compression cold rolled after heat treatment espe-

cially at the root radius. Thread forming at Rockwell C50 to C65 hardness greatly reduces the life of thread rolls. This method entirely overcomes this failure while maintaining the required tensile fatigue life of the bolt threads.

3,590,410
BOOT TREE
Michael Peter Shields, Encino, Calif., assignor to Walk-On Corporation, Hollywood, Calif.
Filed July 26, 1968, Ser. No. 747,956
Int. Cl. A43d *5/00*
U.S. Cl. 12—120.5 **4 Claims**



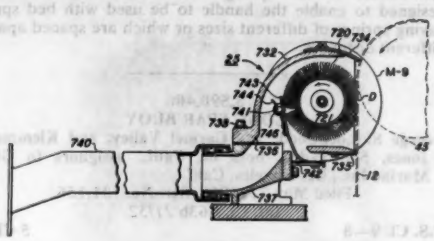
A boot and shoe tree having a platform for rigidly receiving the bottom of a boot or shoe in a flat position, means for adjusting the length of the tree to the length of the boot or shoe, means for attaching the boot or shoe to the platform; the tree being curved upwardly toward the boot or shoe at the forward and rearward ends thereof so as to enable the boot or shoe to be worn and readily walked in while attached to the tree.

3,590,411
STIFFENING PROCESSES
John C. Zemlin, Reading, Pa., assignor to USM Corporation, Boston, Mass.
Filed Dec. 26, 1968, Ser. No. 787,175
Int. Cl. A43d *00/00*
U.S. Cl. 12—146 D **9 Claims**

Stiffening process for sheet material particularly for parts of shoe uppers. In the stiffening process, liquid reagents are mixed and formed into a pliable plastic stiffener layer at an intermediate stage of cure. With the stiffener layer disposed against the material to be stiffened, the assembly is shaped and heated to soften the plastic and establish adhesion between the plastic stiffener layer and the sheet material and the plastic is thereafter cured to heat resistant, shape-retaining condition.

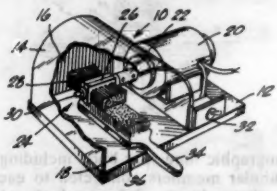
3,590,412
BRUSH CLEANING DEVICE FOR ELECTROSTATIC MACHINES
Dennis Paul Gerbasi, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 24, 1968, Ser. No. 732,002
Int. Cl. A47l *13/40*
U.S. Cl. 15—1.5 **1 Claim**

A brush cleaning device for use with the developing system of an electrostatic reproduction machine includes a rotating flicker bar in the path of movement of the tips of the bristles of a cleaning brush. As the bristle tips engage and slide over the bar, toner particles on the bristle tips are flicked-off and



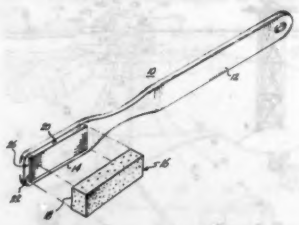
are extracted from the vicinity of the brush by a vacuum system.

3,590,413
HAIR BRUSH CLEANER
Joseph P. Coulson, Jr., 18233 Sherman Way, Reseda, Calif.
Filed Jan. 27, 1969, Ser. No. 794,080
Int. Cl. A46b *17/06, 1/00, 13/02*
U.S. Cl. 15—38 **2 Claims**



A hair brush cleaner device having an irregular rectangular mounting block detachably affixed to a rotary shaft with rows of embedded bristles of such length and stiffness to break and remove hair from a hair entangled brush without entangling the embedded bristles and wherein the embedded bristles deteriorate before those of the hair entangled brush.

3,590,414
ORAL APPLICATOR
Kenneth W. Gores, Bellevue, Wash., assignor to Kirkman Laboratories, Inc., Portland, Oreg.
Filed Jan. 21, 1969, Ser. No. 792,375
Int. Cl. A47k *7/02*
U.S. Cl. 15—244 **1 Claim**



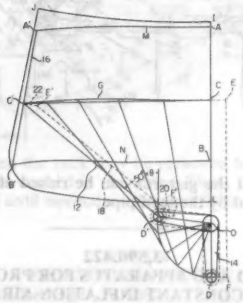
Apparatus for the oral application of medicinal compositions, fluorine compounds, dentifrice and the like includes a handle to which a spongy block of porous material is removably, but tenaciously, secured by a plurality of small, hooklike members carried by said handle and interengageable with and into reticulations on a surface of said block. The applicator is particularly useful in applying fluorides in viscous gellike form to the teeth.

3,590,415

AUTOMOTIVE WINDSHIELD WIPER

Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company Limited, Kangawa-Ku, Yokohama, Japan

Filed Dec. 30, 1969, Ser. No. 889,183
Claims priority, application Japan, Jan. 9, 1969, 44-1467
Int. Cl. A47l *1/00*; B60s *1/02*
U.S. Cl. 15—250.21 6 Claims



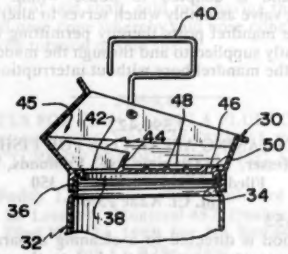
An automotive windshield wiper oscillating along a substantially straight horizontal trochoidal curve. The wiper blade sweeps practically the total area of one-half of the windshield. The trochoidal curve is drawn by a crank arm oscillating about a fixed point and a wiper arm mounted pivotally on the periphery of the crank arm, oscillating in a direction opposite to the oscillation of the crank arm. A quadric chain mechanism is formed by the wiper arm and hingedly connected links to hold the wiper blade in a position substantially perpendicular to the horizontal line.

3,590,416

PAINT TRAY AND PAIL COMBINATION

Erik Henningsen, Milwaukee, Wis., assignor to EZ Painter Corporation

Continuation-in-part of application Ser. No. 616,892, Feb. 17, 1967, now abandoned. This application Nov. 14, 1968, Ser. No. 775,817
Int. Cl. B44d *3/12*
U.S. Cl. 15—257.06 15 Claims



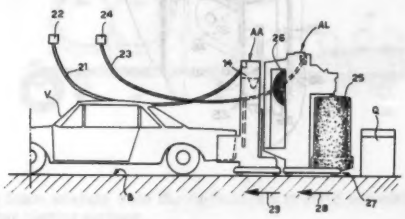
A paint tray for use in loading paint rollers and painting pads which can be or is assembled with a pain pail to receive a proper amount of paint directly therefrom. The tray has a sealing system on the bottom for removably sealing it to the pail and also has a valveless inlet properly disposed for permitting flow of the paint from the pail directly into the tray upon tipping the tray and pail assembly, and the tray also includes an end hood portion for containing the paint during tipping. The inlet can also function as an overflow return for returning paint to the can.

3,590,417

WASHING AND DRYING PLANT FOR MOTOR VEHICLES

Giovanni Emanuel, Turin, Italy, assignor to Societa Per Azioni Emanuel, Turin, Italy

Filed Oct. 20, 1969, Ser. No. 867,813
Claims priority, application Italy, Oct. 29, 1968, 53668 A/68
Int. Cl. B60s *3/06*
U.S. Cl. 15—302 10 Claims



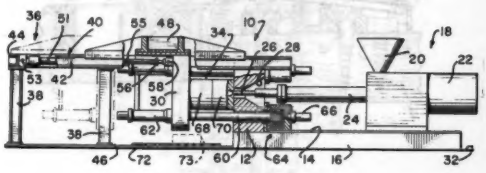
An automatic washing and drying plant for vehicle bodies has separate washing and drying units movable along a common guide track spanning the vehicle-receiving area, the movements and operation of the units being controlled in a predetermined sequence to effect washing and drying of a vehicle without the latter having to be moved.

3,590,418

MOLDING MACHINE

Helmut G. Hoeschel, Newark, Del., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Oct. 21, 1968, Ser. No. 769,222
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 LA 7 Claims



An injection molding machine comprising a first platen mounted upon a base, a second platen suspended from a supporting frame by shoe means, and cylinder-and-piston means connected to the supporting frame and to the second platen for driving the second platen and shoe means relative to the first platen.

A plurality of tie rods mounted to one of the platens longitudinally project therefrom towards the other platen; and the latter is provided with clamping means which apply the clamping force through the tie rods.

3,590,419

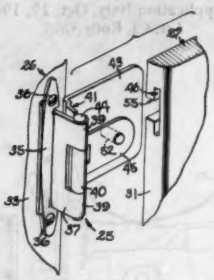
QUICKLY ATTACHABLE AND DETACHABLE HINGE ASSEMBLY

Carl J. Dargene, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed June 6, 1968, Ser. No. 735,127
Int. Cl. E05d *5/06*
U.S. Cl. 16—135 29 Claims

A quickly attachable and detachable hinge assembly for hanging a swinging door on a cabinet includes a retainer insertable into a slot in the edge of the door and adapted to be clamped to the door by a bolt extending through an opening in the face of the door and threaded into the retainer. By loosening the bolt slightly, the retainer may be unclamped

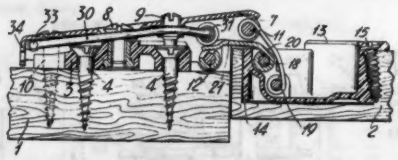
from the door to permit removal of the latter from the hinge assembly and the cabinet. Another version of the hinge assembly is quickly and easily attachable to the cabinet as well as the door.



3,590,420
SELF-LATCHING HINGE

Luciano Salice, Cantu, Italy, assignor to Arturo Salice S.p.A., Cantu, Italy

Filed Nov. 20, 1967, Ser. No. 684,294
Claims priority, application Italy, Nov. 21, 1966, Oct. 6, 1967, 30192A/66;21332A/67
Int. Cl. E05d *3/06*
U.S. Cl. 16—164 **21 Claims**



A device for a concealed twin-linked hinge suitable to automatically block a door, flap door or horizontally bowed door at its closed position, wherein the device is comprising a resilient member, secured to a stationary part of the hinge, and one or two cams acted upon by said member and pertaining to one of the movable elements of the hinge, particularly to the innermost of the two links forming one of the oscillating rods for the twin-linked hinge system.

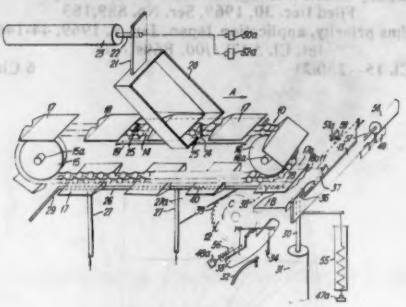
3,590,421
MACHINE AND METHOD FOR CLEANING AND CUTTING OPEN GIZZARDS OF SLAUGHTERED BIRDS

Peter Loth, and Kjeld Loth, both of Skovsgaard, Denmark, assignors to Gordon Johnson-Stephens Limited, Gloucester, England

Filed Oct. 17, 1968, Ser. No. 768,291
Claims priority, application Denmark, Nov. 9, 1967, 5597/67
Int. Cl. A22c *17/14*, *21/06*
U.S. Cl. 17—11 R **8 Claims**

A machine for cleaning and cutting open the gizzards of slaughtered birds by first cleaning the gizzards by flushing them with a fluid under pressure, and then cutting them open.

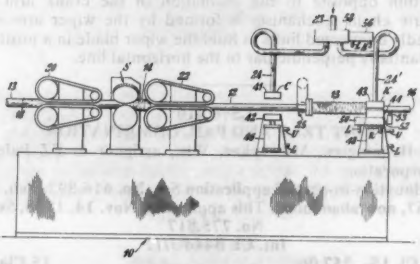
A means for both supplying the fluid under pressure and for guiding the gizzards in a hollow feed pipe which skewers the gizzards. A feed conveyor for presenting them to the skewer has a conformation so that the orientation of the gizzards is correct. The feed pipe has a second set of outlets for the fluid so that the gizzards can be rinsed after cutting but while still guided by the feed pipe.



3,590,422
METHOD AND APPARATUS FOR PROVIDING CONSTANT INFLATION AIR

Edward Andrew Matecki, Evergreen Park, and Verner Edwin Pearson, Oak Lawn, both of, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 7, 1969, Ser. No. 797,419
Int. Cl. A22c *11/02*
U.S. Cl. 17—42 **4 Claims**



The shirring mandrel of a shirring apparatus is provided with ports and is adapted to house within its bore a reciprocating valve assembly which serves to alternately open and close the mandrel ports thereby permitting inflation air to be constantly supplied to and through the mandrel ports to and through the mandrel bore without interruption.

3,590,423
CLEANING APPARATUS FOR FISH

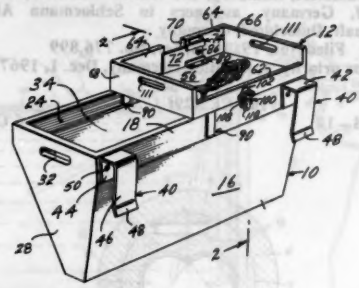
Thomas V. Messer, 747 Olympic Ave., Edmonds, Wash.

Filed Jan. 2, 1970, Ser. No. 350
Int. Cl. A22c *25/06*
U.S. Cl. 17—53 **9 Claims**

My invention is directed to a cleaning apparatus for fish and which apparatus may be attached to the gunwale of a small fishing boat. The apparatus comprises a rack having a wide, open top and a small or narrow, open bottom. It is possible to clean the fish so as to allow the waste products to fall through the narrow, open bottom. However, the narrow, open bottom prevents the fish from falling through and out of the rack.

In addition, there may be placed a tray on top of the rack. The tray provides a working platform for cleaning small fish. The waste products of the small fish may be pushed outside of the tray so as to fall into the water. Further, the tray provides a working platform for cutting up fish and other materials to use as bait while fishing.

When the rack and tray are no longer needed in the fishing trip, the tray may be removed from the rack and washed in



the water. Then the rack may be removed from the gunwale of the boat and washed in the water. Then, the rack and tray may be stored until needed on the next fishing trip.

3,590,424

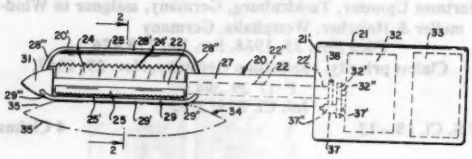
FISH SCALING DEVICE

Ralph T. Shults, Hettinger, N. Dak.

Filed July 19, 1968, Ser. No. 746,022

Int. Cl. A22c *25/02*

U.S. Cl. 17—67 **2 Claims**



The invention comprises a fish scaler which is power operated and includes a handle, a shaft rotatably mounted to one end of the handle, a sleeve fixed to said one end of said handle and covering an inner portion of the shaft, three elongated blades fixed to the outer end of said shaft beyond said sleeve, three elongated rods spaced equidistantly and radially about said shaft and having their inner ends extending toward and mounted to said sleeve and having their central portion extending across the blades and spaced radially beyond the outer edges of said blades, a nose cone rotatably mounted to the outer end of said shaft, said rods having their outer ends fixed to said nose cone whereby said nose cone remains fixed relative to the rotation of said shaft.

3,590,425

APPARATUS FOR PROCESSING A FLUID COMPOUND FOR PRODUCING FOAM MATERIAL FOR THE MANUFACTURE OF PRODUCTS HAVING A CELLULAR STRUCTURE

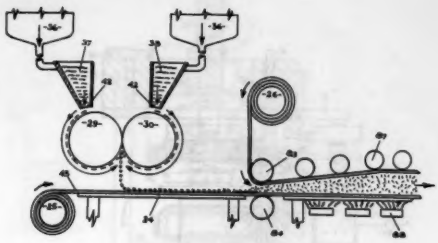
Abraham Buddy Lieberman, 4755 Boulevard des Grandes Prairies,, St. Leonard, (Montreal 457) Quebec, Canada

Filed Mar. 24, 1969, Ser. No. 809,601

Int. Cl. B29c *27/00*

U.S. Cl. 18—4 **8 Claims**

The herein described method and apparatus of processing a fluid compound from two or more chemical charges for producing foam material, such as polyurethane foam, for the manufacture of products having a cellular structure, which briefly consists in the metering of these chemical charges, two contrarotating film-carrying rolls are in intimate contact with one another, each roll being in contact with one of the two chemical charges, which are located in their respective receptacles, picks up or is applied with films of the metered chemical charge from its receptacle and forces it into intimate contact with the films of the metered chemical charge that is applied to or picked up on the other roll and effecting a blending action therewith and then directing the reaction-



ing foam mixture onto the surface of a moving paperboard or other casting surface.

3,590,426

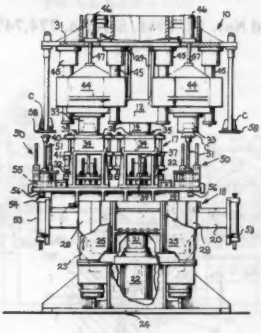
APPARATUS FOR FORMING PLASTIC ARTICLES

Casimir W. Nowicki, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed July 26, 1967, Ser. No. 656,116

Int. Cl. B29d *23/03*

U.S. Cl. 18—5 BM **3 Claims**



Apparatus is provided for injection molding, at one station, a substantially flat, disc-shaped parison while simultaneously blow molding, at a second station, a cup-shaped container from a previously formed parison. The apparatus has common clamping means for closing the injection mold and the blow molds with the clamping means arranged to provide maximum clamping force at the injection mold and only minimal forces at the blow molds.

3,590,427

MACHINE FOR FORMING CAPSULES

Maharaj Krishen Mehta, Cardiff, Wales, assignor to P. Leiner & Sons (Encapsulations) Limited, Treforest, Glamorganshire, Wales

Filed Aug. 26, 1968, Ser. No. 755,420

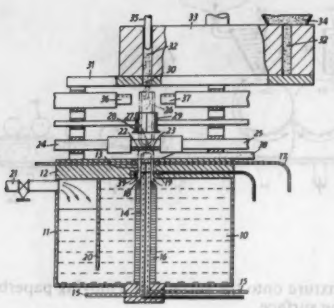
Claims priority, application Great Britain, Sept. 22, 1967, 43,312/67

Int. Cl. B29d *23/04*

U.S. Cl. 18—5 R **10 Claims**

A method of and apparatus for forming filled gelatine capsules by extruding a tube, sealing together the walls of the

tube to form one end of the capsule, filling the capsule through the open end of the tube, sealing off the open end



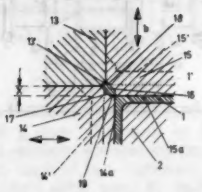
and detaching the capsule from the tube before repeating the process to form a further capsule.

3,590,428

METHOD AND APPARATUS FOR MOLDING CONTAINERS

Edmund Munk; Herbert Haas, and Gerd Weinberg, all of Oberstenfeld, Germany, assignors to Furnier-und Sperrholzwerk, J. F. Werz Jr. R. G., Oberstenfeld, Wurttemberg, Germany

Filed Nov. 12, 1968, Ser. No. 774,747
Int. Cl. B29g *7/00*
U.S. Cl. 18—5 **13 Claims**



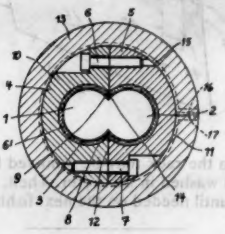
The molding of an angular container with an open top and with sidewalls which are outwardly inclined or provided with an outwardly projecting rim on their free edges in an upside-down position on a stationary mold core by means of horizontally movable dies and a vertically movable bottom-forming die of a mixture of a comminuted fibrous material and a hot-setting binder, wherein the dies are made of a shape so that in their compressing position the front ends of their adjacent sides overlap each other, whereby the dies not only mold the container itself but also compress and cure the mixture which has been filled into the area between each edge of the core and two adjacent retracted dies so as to form thin solid strips which extend along and project outwardly from edges of the molded container and which are to be broken off after the dies have been retracted and the container has been lifted out of the mold.

3,590,429

CASINGS FOR DOUBLE CONVEYOR WORMS FOR EXTRUDERS OF SYNTHETIC MATERIALS

Wilhelm Bammert, Homberg, and Walter Wimmers, Krefeld, both of, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 19, 1968, Ser. No. 776,899
Claims priority, application Germany, Dec. 1, 1967, P 17 29 345.7
Int. Cl. B29f *3/08*
U.S. Cl. 18—12 **6 Claims**

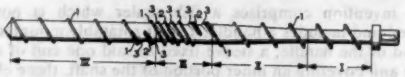


The wear-resisting lining may consist of an alloy having a basis of boron with additions of nickel and silicon, or a basis of nickel and cobalt.

3,590,430

SCREW EXTRUDER

Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Nov. 25, 1968, Ser. No. 778,476
Claims priority, application Germany, Nov. 29, 1967, P 17 29 394.6
Int. Cl. B29f *3/02*
U.S. Cl. 18—12 **4 Claims**

A screw extruder for processing thermoplastic compositions comprising a feed screw having a homogenizing zone, which succeeds the melt zone. The feed screw comprises at least one additional land, which is substantially restricted to the homogenizing zone and has the same lead as the main feed land or lands of the screw. A homogenizing land having a larger lead than the feed lands branches from each feed land at the beginning of the homogenizing zone and joins the next following feed land in the longitudinal direction of the screw at the rear end of the homogenizing zone. The clearance between the homogenizing lands and the extruder cylinder is somewhat larger than the clearance between the feed lands and the extruder cylinder.

3,590,431

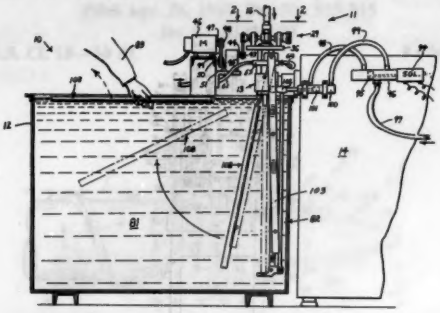
MACHINE FOR EXTRUDING POLYETHYLENE ON WOOD

Harold Miller, 3235 Emons Ave., Brooklyn, N.Y.; Jack Miller, 2055 Center Ave., Fort Lee, N.J., and Michael Miller, 2055 Center Ave., Fort Lee, N.J.

Filed Jan. 21, 1969, Ser. No. 792,285
Int. Cl. B29f *3/10*
U.S. Cl. 18—13 **8 Claims**

A machine and process for extruding polyethylene directly around a wooden core such as a broom handle that is moved vertically downward through a plastic extruding die placed close above a water surface of a tank containing cold water to cause a shrinking of the extruded plastic for a tight fit

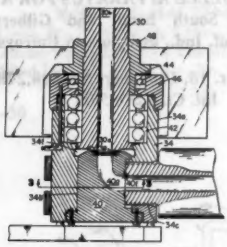
upon the wooden handle as the coated handle descends into the water. Provision is made to keep the wood handle cool during the coating operation and any moisture therein that would effect blistering of the coating.



3,590,432
ROTARY ASSEMBLY FOR MOLTEN PLASTIC

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Dec. 19, 1968, Ser. No. 785,118
Int. Cl. B29d *23/04*
U.S. Cl. 18—14 **13 Claims**



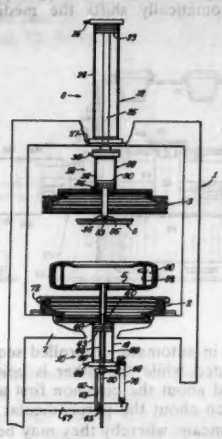
Rotary apparatus for molten plastic having sealed transition between stationary and rotary sections. A removable insert forming the stationary conduit supports the seal or transition member, the extruder adapter directly engages and seals against the insert member, and this member also is loosely fitted in its housing and held against an alignment surface by the adapter; the transition member provides a smooth bore transition from the stationary to rotary conduit surfaces; a sintered spherical bronze base filled with a mixture of fluorocarbon plastic and lead provides a sealing surface at the point of relative movement; spaced-apart stationary and rotary sections are sealed by low friction plastic sealing members or sealing members of hard material, and in the latter case the rotary and stationary members are preloaded toward each other, advantageously using conical springs urged against the bearing assembly.

3,590,433
TIRE MOLDING MACHINE

Vaughn Rawls, Lima, Ohio, assignor to National-Standard Company, Niles, Mich.

Filed Feb. 1, 1968, Ser. No. 702,224
Int. Cl. B29h *5/04*
U.S. Cl. 18—18 **10 Claims**

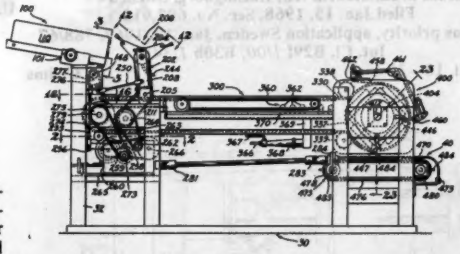
Tire molding machine embodying relatively movable tire vulcanizing molds formed with desired tire tread matrices for receiving therebetween a tire carcass having tread material applied thereto, including opposed tire bead guides movable conjointly and uniformly relative to each other to maintain the tire beads and the tire carcass in centered relation with respect to the molds and thus provide an accurately centered tread for the tire.



3,590,434
PACKAGE FORMING MACHINE

Ridley Watts, Jr., Cleveland, and John F. Berry, Bedford, both of, Ohio, assignors to The American Packaging Corporation

Filed Jan. 13, 1966, Ser. No. 520,485
Int. Cl. B29c *17/00*
U.S. Cl. 18—19 **24 Claims**



Pockets are formed in cards with plastic windows by feeding the cards from a magazine to a conveyor, heating the plastic window while the card is conveyed, transferring the cards to forming dies on a rotatable drum and vacuum forming the pocket. The cards are fed to the conveyor by vacuum cups oscillated toward and away from the card magazine and rotated toward the conveyor. Cards are then supported by rails and moved in timed relationship with the rotatable drum and are transferred to the forming dies. Rotation of the drum sequentially controls vacuum forming of the pockets and ejection of the finished cards.

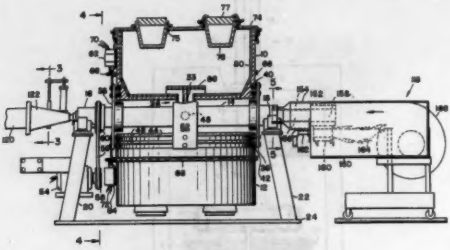
3,590,435
ROTARY MOLDING

Philip N. Dunham, Biddeford, and Ansel W. Dunham, Saco, both of, Maine, assignors to Philips Maine Corporation, Biddeford, Maine

Filed June 24, 1968, Ser. No. 739,396
Int. Cl. B29c *5/04*
U.S. Cl. 18—26 **10 Claims**

Drums are mounted for simultaneous rotation about a first axis and independently about a perpendicular second axis and are adapted to contain molds each having a charge of

thermosetting plastic. The drums are mounted on a common shaft through which a heating and cooling medium is separately delivered with one drum being heated while the other drum is being cooled in alternating sequence. A valving arrangement automatically shifts the mediums from one



drum to another in automatic controlled sequence whereby one drum is heated while the other is being cooled. The drums are rotated about the common first axis at the same speed while driven about the perpendicular second axis by separate driving means whereby they may be rotated at different speeds about the second axis.

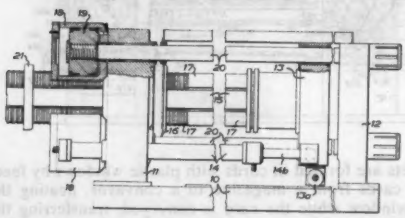
ERRATUM

For Class 18—30 see:
Patent No. 3,590,418

3,590,436
ARRANGEMENT IN AN APPARATUS HAVING A STATIONARY AND A MOVABLE PRESS PLATEN, PARTICULARLY AN INJECTION MOLDING MACHINE

Karl Gustav Bertil Akesson, Halsingborg, and Nils Gunnar Noresson, Hittarp, both of, Sweden, assignors to Broderna Akessons Maskinfabrik AB, Halsingborg, Sweden

Filed Jan. 15, 1968, Ser. No. 697,912
Claims priority, application Sweden, Jan. 19, 1967, 788/67
Int. Cl. B29f *1/00*; B30b *1/34*
U.S. Cl. 18—30 **2 Claims**



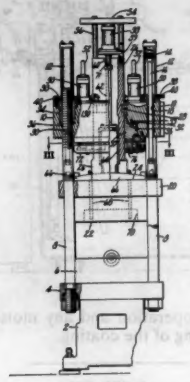
In an apparatus having a stationary and a movable press platen, a movably arranged backing member is penetrated by an element which is movable together with the movable platen and which can be clamped to the backing member for exerting pressure on the movable platen via the backing member.

3,590,437
INJECTION MOLDING PRESSES

Rupert E. Annis, Jr., Salem; Adolph S. Dorosz, Beverly; Richard M. Elliott, Beverly, and Frederick S. Sillars, Beverly, all of, Mass., assignors to USM Corporation, Boston, Mass.

Filed Aug. 8, 1968, Ser. No. 751,147
Int. Cl. B29f *1/00*; B29c *3/00*; B30b *1/18*
U.S. Cl. 18—30 LA **7 Claims**

An injection molding press including stationary means for mounting a portion of a mold assembly, movable means for mounting the remainder of the mold assembly for movement toward and away from the stationary mold mounting means, means for moving the movable means whereby to bring the

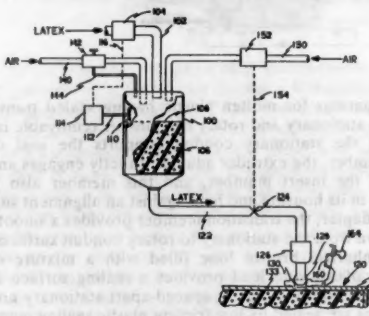


mold assembly portions into engagement or near engagement with one another, and a second moving means for urging the mold members together under high force.

3,590,438
INLET AND NOZZLE APPARATUS FOR A MOLD

Gerald R. Ritter, South Bend, and Gilbert C. Zion, Mishawaka, both of, Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 18, 1969, Ser. No. 808,278
Int. Cl. B29b *5/04*
U.S. Cl. 18—30 **2 Claims**



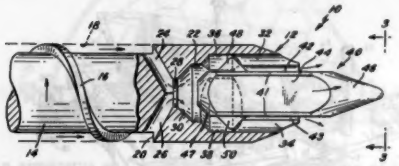
Low density foam objects are made from a material so highly frothed that it is difficult to pour into a mold. It is therefore delivered to the mold under pressure by means of system having a holding tank with appropriate foam inlet and outlet means, a mechanism for maintaining constant pressure in the tank, a mechanism for preventing overfilling of the tank, and a control which allows air to enter the tank to replace the foam material displaced during filing of the mold. The foam delivery hose has a special nozzle which rapidly couples to and decouples from the mold filling port. The mold has special provision for preventing leakage of foam between the mold cavity and its top plate.

3,590,439

SHUTOFF DEVICE FOR AN INJECTION MOLDING MACHINE

Eskil P. Swanson, Potter Road, North Kingstown, R.I.

Filed Apr. 28, 1969, Ser. No. 819,915
Int. Cl. B29f 5/04
U.S. Cl. 18—30 AC 9 Claims



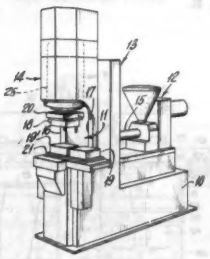
A shutoff device for use with a rotating feed screw of an injection molding machine including a head portion in which a chamber is formed for directing a plastic material to a mold or die, a pin being located within the chamber, and the pin and head portion having relative movement so that upon rotation of the feed screw during the feeding operation, the feed screw has open communication with the mold or die, but during the injecting operation, the feed screw is sealed against backflow of material from the mold or die.

3,590,440

CLAMP MECHANISM FOR A PLASTICS INJECTION-MOLDING MACHINE

Francis W. Cook, Jr., Newington, Conn., assignor to The New Britain Machine Company, New Britain, Conn.

Filed May 22, 1969, Ser. No. 826,910
Int. Cl. B29f 1/00
U.S. Cl. 18—30 6 Claims



The invention contemplates vertical-action hydraulic mold-positioning and clamp mechanism carried above the region of mold-filling, in a plastics injection-molding machine having provision for selective horizontal discharge of plasticized melt. The nature of the mold-clamp mechanism is such that it will self-adapt to bending deflections of frame parts, in the presence of high clamp-force pressures. In the hydraulic mechanism disclosed, major displacements are achieved by a relatively low-pressure system, whereas clamp forces are generated by a relatively high-pressure system. For safety, the high-pressure operation involves a minimum of displaced fluid, and means are provided to automatically vent the high-pressure system in the event of such downward positioning of parts as is indicative of failure to install a complete mold.

3,590,441

EMBLEM ATTACHMENT DEVICE FOR POCKET CLIPS

Myron B. Goldberg, Aurora, Colo., assignor to Meier & Frank Merchandise Co., Inc., Denver, Colo.

Filed Jan. 22, 1970, Ser. No. 5,036
Int. Cl. B43k 25/00; G09f 3/04
U.S. Cl. 24—11 5 Claims

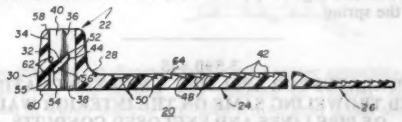
An emblem attachment device for use on pocket clips of pens, pencils, and other penlike articles, is an elongated body attached to a pen clip, having upstanding sides and an elongated slot therein, by means of a rib on the inner surface of the body with undercut edges forming lips engaging in the clip slot. The outer face of the attachment body carries appropriate-indicia, symbols, initials and the like.

3,590,442

BUNDLING STRAP

George H. Geisinger, Mountainside, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Jan. 7, 1970, Ser. No. 1,143
Int. Cl. B65d 63/00
U.S. Cl. 24—16 PB 13 Claims



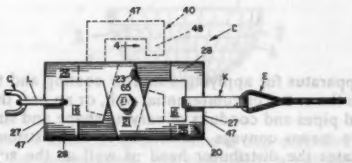
A bundling strap for looping about articles, comprised of an elongated, flexible, serrated body integral with and extending from an apertured head and terminating in a tail extension. One end of a dual-ended, obliquely angled, unidirectional locking means is hingedly coupled within a first transverse aperture in the head and is integral therewith, being adapted to lockingly engage the serrations on the elongated body inserted within a second transverse aperture in the head proportioned to conveniently receive the body therein, said locking means thereby preventing the attempted withdrawal of the body from the apertured head.

3,590,443

HAND-RELEASEABLE SAFETY COUPLING FOR ANNULATED MEMBERS

Erwin H. Kubsch, 2111 Brookside Ave., Omaha, Nebr.

Filed Apr. 23, 1970, Ser. No. 31,157
Int. Cl. A44b 21/00
U.S. Cl. 24—73 HH 8 Claims



There is provided a secure coupling between annulated members such as a multilink flexible chain, a rope carrying

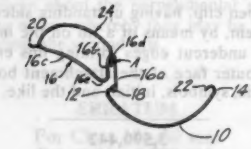
circular rings, etc. The coupling provides a secure connection between the annulated members whether such members to be taut or slack under use conditions; however, the coupling can be released manually, without the use of ancillary tools, to effect relative detachment between the annulated members. The safety coupling comprises a pair of nestably broadly abuttable generally S-shaped mirror-imaged plates, a medial portion of the respective plates being pivotably attached to provide relative rotation about a common transverse-axis, there being moderate tension means tending to resiliently urge one plate toward the other plate and maintaining the interplates nestable abutment.

3,590,444

CLASPS

Abraham Goodman, Essex Fells, N.J., assignor to H. Goodman & Sons, Inc., Kearney, N.J.

Filed Jan. 7, 1970, Ser. No. 1,181
Int. Cl. A45d *8/24*
U.S. Cl. 24—248 5 Claims



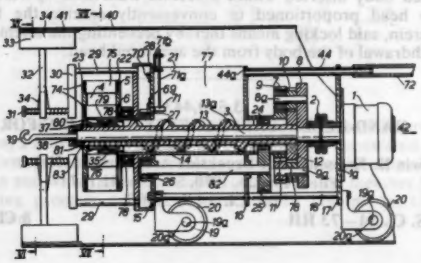
A clasp adapted to be employed as a ponytail holder having a pair of arcuate pivotally interconnected 18 sheet metal parts 10, 16 provided with locking means 20, 22, spring means 24 and a guard portion 16*a*, 16*b* to house the free end A of the spring.

3,590,445

APPARATUS FOR APPLYING A MORTAR COATING AND TROWELING SAME ON THE INTERIOR WALLS OF PIPE LINES AND ENCLOSED CONDUITS

Walter Heinrich Braun, Seebachstrasse 65, 8036 Dresden, Germany

Filed July 15, 1969, Ser. No. 841,808
Int. Cl. B28b *21/92*
U.S. Cl. 25—38 13 Claims



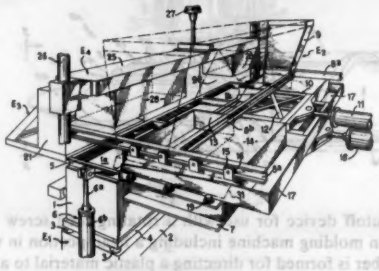
An apparatus for applying a mortar coating and troweling same on the entire circumferential wall, or an part thereof, of enclosed pipes and conduits of varying shape and size. A single drive means conveys the mortar to the distributor head and rotates the distributor head as well as the subsequent troweling assembly. In a preferred embodiment a rotating troweling assembly is replaced by at least one troweling element dragged behind the apparatus moving through the pipe.

3,590,446

MACHINE FOR THE MASS-PRODUCTION OF MOULDED REINFORCED CONCRETE ELEMENTS

Roger Paul Sonneville, 5 Rue Maurice Ravel, 92 Saint Cloud, France

Filed June 18, 1968, Ser. No. 737,918
Claims priority, application France, June 22, 1967, 111434
Int. Cl. B28b *23/02*
U.S. Cl. 25—41 J 6 Claims



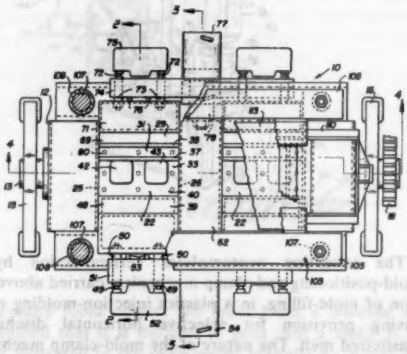
Method for moulding a concrete element having reinforcing means, comprising pouring in a mould a measured amount of concrete for producing the element, vibrating the concrete, introducing to the required, depth at least a part of the reinforcing means, tamping the concrete. Support means for the reinforcing means are engaged with the latter during the vibration and tamping and disengaged from the reinforcing means a few seconds before the end of the vibration and tamping.

3,590,447

APPARATUS FOR MAKING FACED CONCRETE BLOCKS

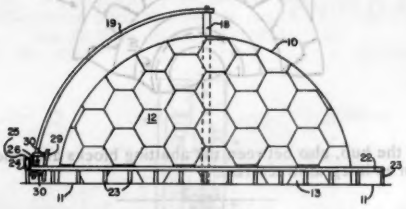
Ernest J. Taylor-Smith, 2905 West 37th Avenue, Vancouver, British Columbia, Canada

Division of Ser. No. 608,459, Jan. 10, 1967, Pat. No. 3,497,580, which is a continuation of Ser. No. 393,014, Aug. 31, 1964, abandoned.
Filed Sept. 17, 1969, Ser. No. 858,610
Int. Cl. B28b *7/08*
U.S. Cl. 25—41 R 19 Claims



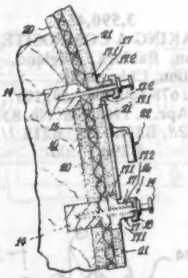
Apparatus for making a concrete block faced with rocklike material. Adjacent, initially opened top first and second compartments sharing a common wall receive rocklike material and a quantity of concrete, respectively. The apparatus is then rotated to position the rocklike material compartment below the concrete compartment. The common wall is then removed and the rocklike particles are moved toward and into the concrete.

3,590,448
CONSTRUCTION APPARATUS
Donald R. Bryant, 926 24th Ave. North, Texas City, Tex.
Filed Dec. 30, 1968, Ser. No. 787,661
Int. Cl. B28b 7/04
U.S. Cl. 25—118 R 10 Claims



An apparatus and method for the construction of circular structures of moldable materials. The apparatus comprises a first mold member having a shape and size substantially similar to one surface of said circular structure to be constructed, a second mold member spaced apart from said first mold member and substantially parallel to the surface thereof, the four edges of said second mold member intersecting at substantially right angles with one another, said second mold member having a horizontal length less than one-fourth the circumference of that portion of said first mold member adjacent said second mold member and having a vertical height less than one-fourth the vertical height of said first mold member as measured along the surface thereof, said second mold member being connected such as to permit vertical movement thereof to carrying means for horizontally moving said second mold member about the entire circumference of said first mold member while maintaining said second mold member at all times throughout such horizontal movement substantially equidistant from the surface of said first mold member.

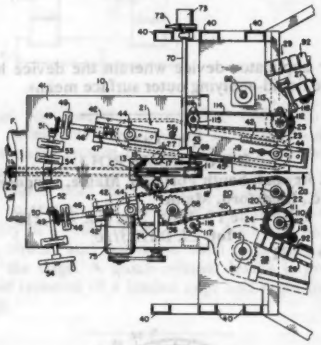
3,590,449
APPARATUS FOR FORMING THIN, REINFORCED SHELLS OF CEMENTITIOUS MATERIAL
Adam J. Whitley, III, 8040 S. W. 109th St., Miami, Fla.
Filed Oct. 1, 1969, Ser. No. 862,799
Int. Cl. B22d 19/02
U.S. Cl. 25—130 S 8 Claims



Apparatus for forming thin cementitious shells, such as boat hulls, having metal reinforcement mesh embedded therein. The invention utilizes a mold having a forming surface complementary to that of the shell to be formed and is provided with longitudinally extending, spaced-apart spacer members for supporting the reinforcement in spaced relation from the forming surface of the mold. Elongated guides are removably secured to respective spacer members, with the reinforcement interposed therebetween, and such guides provide a dual function of retaining the reinforcement in position on the mold while the reinforcement is embedded in a plastic cementitious material and also provide surfaces for guiding a smoothing and compacting device over the cementitious material whereby complex, curved contours of the desired thickness can readily be formed by relatively unskilled workmen.

After the cementitious material has at least partially set, the guides are removed and the resulting grooves in the shell are filled with additional plastic cementitious material and the latter faired to the previously applied material. When the thus formed body has set up sufficiently to permit handling, it will be removed from the mold and the grooves resulting from the spacer members will be filled with cementitious material and the latter faired into the adjacent cementitious material.

3,590,450
OPENING TENTER, FOR TUBULAR KNITTED FABRICS AND THE LIKE
David Pernick, Brooklyn, N.Y., assignor to Knitting Specialty Machinery Corp., Brooklyn, N.Y.
Filed Jan. 21, 1969, Ser. No. 792,656
Int. Cl. D06c 3/02; D06h 7/08
U.S. Cl. 26—51.3 16 Claims



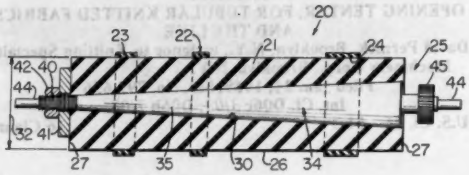
The invention is directed in part to a tenter apparatus, particularly for the slitting and opening of tubular knitted fabrics, in which there is provided a divergent tenter section, for conveying slit edges of an initially tubular fabric to an open width condition and a second, integral tenter section for further conveying the fabric at a predetermined open width dimension during the processing stage. Importantly, the opening and processing stages of the tenter, at each side, are constituted by a single tenter chain, so that the fabric is uninterruptedly controlled by the tenter throughout the opening and processing sequence.

3,590,451
PROCESS FOR FABRICATING AN OFFENSIVE AND DEFENSIVE PROJECTILE HEAD, AND PROJECTILE HEAD PRODUCED ACCORDING TO THIS PROCESS
Louis Dessart, 27, rue de Charatte, Vivegnis Lez-Liege, Belgium
Filed Mar. 20, 1968, Ser. No. 714,586
Claims priority, application Belgium, Mar. 31, 1967, 696.464
Int. Cl. B21k 21/06
U.S. Cl. 29—1.21 3 Claims

Process for fabricating an offensive and defensive projectile head for antipersonnel use comprising a hollow metallic body and provided with reducing slits, consisting of stamping out a metallic blank of definite quality, thickness and form; of striking, impressing or marking, by pressing or rolling, one

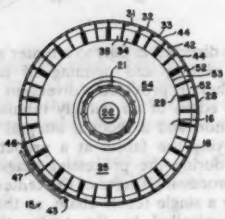
or both faces of this blank with a set of impressions determining the reducing slits; and in swaging the said blank to give it the desired form.

3,590,452
ROLLER APPLICATOR DEVICE
John A. Macleod, Edinburgh, Scotland, assignor to Dayco Corporation, Dayton, Ohio
Filed Jan. 9, 1969, Ser. No. 790,123
Int. Cl. B41g *1/04*
U.S. Cl. 29—115 **8 Claims**



A roller applicator device wherein the device has readily changeable liquid-applying outer surface means.

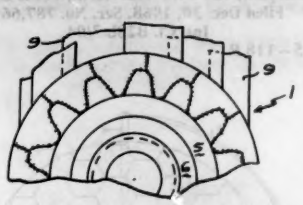
3,590,453
HONEYCOMB ROLL
Edward T. Bryand, South Portland, Maine, assignor to Metal-Tech, Inc., Biddeford, Maine
Filed June 19, 1968, Ser. No. 738,213
Int. Cl. D21f *3/10*
U.S. Cl. 29—121 **10 Claims**



An improved cylindrical suction roll suitable for carrying a foraminous screen thereon for forming paper, said cylindrical roll being of the type formed by alternating straight and undulating strips attached to one another and running axially between end members, and the improvement comprising the projection of said straight strips radially beyond said undulating strips to form unitary, circumferentially spaced, continuous axial supports for outer meshed layers. The projecting straight strips are firmly anchored in the honeycomb openwork of the roll by notching the nodes of the undulated strips and applying fillet welds in the notches to create a countersink, or tapered edge, in the area of attachment.

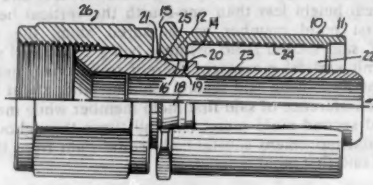
3,590,454
TURBINE ASSEMBLY FABRICATION
Edward A. Brass, Tustin, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Mar. 3, 1969, Ser. No. 803,901
Int. Cl. B21k *3/04;* **B23p** *15/02, 15/04*
U.S. Cl. 29—156.8 B **2 Claims**

A small turbine for a jet engine is disclosed in which each bucket or blade is carried on a metal block which has a base portion conforming to a gear tooth shape. Slots in the hub of the turbine which receives the blade portion are cut on a gear cutting machine, this machine being indexed in a highly precisional manner. When the tooth-shaped portions of the blocks are assembled in the hub slots, the assembly is placed in an electron beam welder and the joints between the blocks



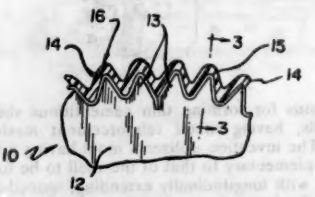
and the hub, also between the abutting blocks are welded to form an integral structure.

3,590,455
METHOD OF PRODUCING A HOSE FITTING HAVING A DEFORMABLE SOCKET
John B. Harris, Clifton, N.J., assignor to Resistoflex Corporation, Roseland, N.J.
Division of Ser. No. 666,249, Sept. 8, 1967, abandoned.
Filed May 15, 1969, Ser. No. 824,987
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157 **5 Claims**



This invention relates to a method of producing a hose end fitting by welding a radially inner edge adjacent the external edge of a flange on a fitting socket to an abutment on a nipple and of providing a hose assembly therewith by radially contracting the socket while bending the flange until a sidewall of the flange engages a sidewall of a groove in the nipple to form an interlock.

3,590,456
METHOD OF MAKING A COMPOSITE DRIVE WHEEL
Thomas R. Seaman, Baldock, England, assignor to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 678,800, Oct. 30, 1967, Pat. No. 3,469,467.
Filed Apr. 2, 1969, Ser. No. 831,802
Int. Cl. B21d *53/28;* **B21h** *5/00;* **B21k** *1/30;* **B23p** *15/14;* **B29d** *15/00*
U.S. Cl. 29—159.2 **1 Claim**



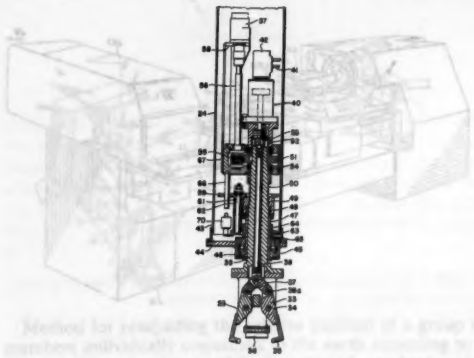
A composite drive wheel device is disclosed herein to provide an illustration of this invention. This wheel provides a stamped circular plate having a complemental peripheral tooth root ribbon secured to said teeth with a plastic toothed rim which may be molded over the ribbon tooth roots.

3,590,457

APPARATUS FOR ASSEMBLING ANODES FOR ELECTROLYTIC CELLS

Stanley J. Gustetic, Euclid, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Sept. 15, 1969, Ser. No. 857,834
Int. Cl. H01r *33/00*
U.S. Cl. 29—203 R 9 Claims



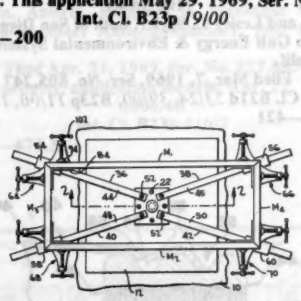
Relates to an apparatus for securing threaded anode sections to a threaded anode in an electrolytic cell in which the anode clamping assembly is floatably mounted relatively to a supporting structure so that contact pressure between the anode section and an anode in the electrolytic cell will not exceed an amount sufficient to fracture the anodes.

3,590,458

FOUR-CORNER PICTURE FRAME ASSEMBLY UNIT

Clifford H. Day, Box 602, McLean, Tex.

Continuation-in-part of application Ser. No. 635,114, , now abandoned. This application May 29, 1969, Ser. No. 828,833
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 20 Claims



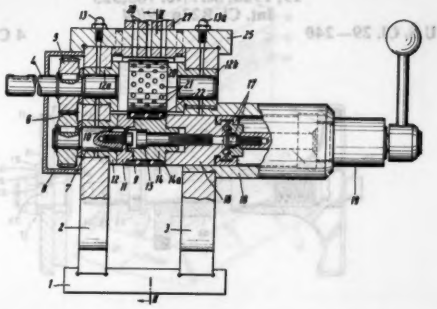
A four-corner picture frame assembly unit comprising a workbench rotatably mounted on a base or support. The workbench supports an arm mounting means from which extend four pivotally mounted outwardly extending arms or bars. Freely slidable on each of these arms or bars is a rider or runner that pivotally carries a conventional corner clamp. Each corner clamp has two fixed flange members extending therefrom at right angles to each other and a screw actuated clamping means associated with each flange. The screw actuated clamping means are arranged to temporarily secure sections or lengths of molding in place against the flange members and in abutting relationship until they are permanently held together by conventional means, such as, nails, screws and/or glue.

3,590,459

APPARATUS FOR INTRODUCING ROLLING ELEMENTS INTO CAGES OF ANTIFRICTION BEARINGS

Wolfgang Katz, 722 Dauchingen, Germany

Filed Sept. 19, 1968, Ser. No. 760,795
Claims priority, application Germany, Sept. 23, 1967, P 16 25 567.7
Int. Cl. B23p *19/04*
U.S. Cl. 29—201 13 Claims



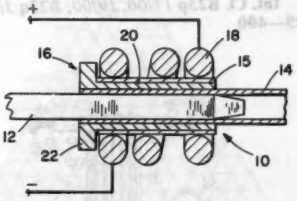
Apparatus for forcibly introducing balls into concave sockets of cylindrical cages for use in antifriction bearings wherein the cages consist of elastically deformable synthetic plastic material and comprise sockets whose open ends have diameters smaller than the diameter of a ball includes a support which rotates a cage about a horizontal axis adjacent to the periphery of a rotary drum having pockets which receive balls from chutes and introduce such balls into successive sockets of the cage. A quick-release device is provided to permit rapid removal of a loaded cage and rapid insertion of a fresh cage.

3,590,460

APPARATUS FOR ASSEMBLING FLANGES TO WAVEGUIDES

Albert E. Highducheck, Syracuse; Ralph L. Busto, Scotia, both of, N.Y., and Raymond G. Rushing, Mentor, Ohio, assignors to The United States Government

Filed Oct. 6, 1969, Ser. No. 863,865
Int. Cl. H05k *13/00*; B23p *19/00*;, *17/00*
U.S. Cl. 29—203 D 4 Claims



Apparatus for assembling flanges to waveguides which utilizes electromagnetic forming means for producing the bond between the waveguide and the flange assembly. The flange assembly includes a collar portion which is mounted about the waveguide adjacent the end thereof and a flanged portion extending from the collar portion. A tapered mandrel is inserted in the waveguide and the electromagnetic forming device is mounted around the collar of the flange assembly and energized for application of a magnetic field across the flange collar and waveguide. A primary varying magnetic field is generated which is which is inductively linked with the workpiece, in this case, the flange collar. The primary varying field induces eddy currents in the collar and the eddy currents create a secondary magnetic field which interacts with the primary field to produce a high uniform pressure which swages the flange assembly against against the

waveguide. The mandrel prevents collapse of the flange collar and waveguide during the assembly and is removed subsequent to completion of the assembly.

3,590,461

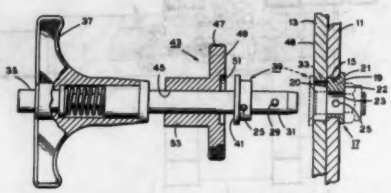
ALIGNMENT MEANS FOR BUSHINGS HAVING ECCENTRIC BORES

Joseph T. Siler, P. O. Box 11, Bowling Green, Ky.

Continuation-in-part of application Ser. No. 722,114, Apr. 17, 1968, now Patent No. 3,509,618. This application Dec. 19, 1968, Ser. No. 785,323

Int. Cl. B23p *19/04*

U.S. Cl. 29—240 **4 Claims**



Following is disclosed a method and apparatus for improving the alignment of "work" and "blind side" bushings with eccentric bores through utilization of a shaft sized to extend into the bores. A latch element is laterally carried by the shaft and adapted to extend into and retract from indentations in the bores for orienting the bushings. An alignment collar is also carried by the shaft and has an aperture that receives the shaft, with the collar having a larger diameter than the diameter of an engaged bushing to enable application of torque and to give a visual reference for axial angularity misalignment between said bushing and its receiving hole in the structural member. The alignment collar makes more exacting alignment of the bushings possible, particularly when an initial limited interference fit between the bushing and its receiving hole (before final seating) is utilized in the installation procedure.

3,590,462

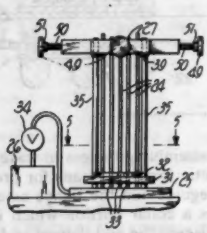
METHOD AND APPARATUS FOR EXPANDING AN ARRAY OF ARTICLES

Jaroslav Mracek, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 18, 1968, Ser. No. 776,743

Int. Cl. B23p *17/00, 19/00;* **B23q** *3/00*

U.S. Cl. 29—400 **16 Claims**



A method and apparatus are provided for expanding a compact array of beam lead devices in such a manner as to maintain original relative orientation between the devices, thus permitting the easy removal of the devices from the expanded array. The devices are initially held by a vacuum on the ends of a compacted, flexed, array of tubes which are subsequently spread apart, either in groups or simultaneously, into an expanded configuration.

3,590,463

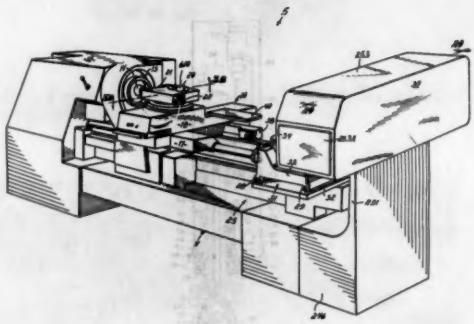
TOOL CHANGING METHOD

Robert K. Burroughs, Batavia, Ohio, and Timothy A. Wakefield, Stillwater, Okla., assignors to The R. K. LeBond Machine Tool Co., Cincinnati, Ohio

Division of Ser. No. 632,055, Apr. 19, 1967, Pat. No. 3,443,310. Filed Mar. 3, 1969, Ser. No. 803,744

Int. Cl. B23p *17/00, 7/00, 19/04*

U.S. Cl. 29—400 **13 Claims**



A method of changing tools on a lathe or other machine tool having multiple cutting tools mounted in a tool turret. A tool changer which practices and carries out the method is operative to remove and replace a tool in the turret while simultaneously another tool in the turret continues the machining cycle so that the cutting operation is not interrupted for a tool change. To this end, a tool transfer slide for transporting tools between the tool turret and a storage matrix is operative to seek, track, "lock onto" and move in synchronization with the tool turret during removal of a tool from the turret and replacement of a new tool.

3,590,464

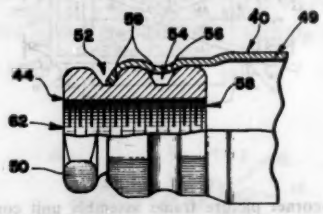
THREADED FASTENER AND METHOD OF MAKING THE SAME

Paul Wildi, and Lesley L. Seyler, both of San Diego, Calif., assignors to Gulf Energy & Environmental Systems, Inc., San Diego, Calif.

Filed Mar. 7, 1969, Ser. No. 805,247

Int. Cl. B21d *53/24, 39/00;* **B23p** *11/00, 17/00*

U.S. Cl. 29—421 **16 Claims**



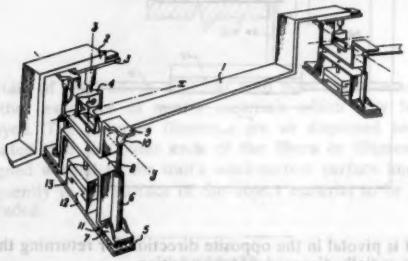
A threaded fastener and a method of making the same are provided in which an outer member with an opening therein receives an internally threaded female member which in turn is adapted to receive an externally threaded male member screwed in an entry end of the female member. The female member is disposed at least partially within the opening of the outer member. A time varying magnetic field is established outside of the outer member to compress the outer member, thus simultaneously joining the outer member and the female member and increasing resistance to rotation of the male member in the female member.

3,590,465

METHOD AND APPARATUS FOR READJUSTING THE RELATIVE POSITION OF A GROUP OF MEMBERS INDIVIDUALLY CONNECTED TO THE EARTH

Andre Cartier, Verrieres-le-Buisson; Phillippe Guillet, Franconville, and Daniel Godin, Fontenay-aux-Roses, all of, France, assignors to Commissariat A L'Energe Atomique, Paris, France

Filed June 11, 1968, Ser. No. 736,943
Claims priority, application France, June 5, 1967, 109162
Int. Cl. B23p *19/00, 19/04;* B23q *17/00*
U.S. Cl. 29—434 11 Claims



Method for readjusting the relative position of a group of members individually connected to the earth according to a given diagram, consisting, while the group of members are interconnected for constituting an isostatic system, in determining the changes in the coordinates of each member according to the remaining degrees of clearance, in calculating the displacements to be effected according said degrees of clearance for bringing back said members in a diagram identical to said given diagram, and in achieving said displacements with the aid of mechanisms allowing movements according any one of the degrees of clearance.

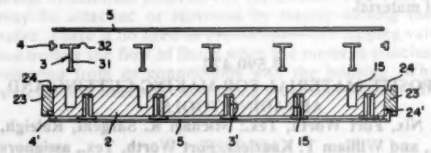
Device according to the working process.

3,590,466

METHOD OF MAKING FLAT REINFORCED STRUCTURES

Hermann Moshammer, and Jaroslav Koser, both of Braunau-Ranshofen, Austria, assignors to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft, Post fach, Wien, Austria

Filed Apr. 21, 1969, Ser. No. 817,883
Claims priority, application Austria, Apr. 22, 1968, A 3866/68
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 10 Claims



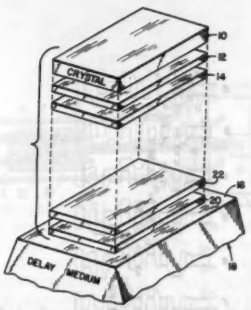
A flat panel-shaped structure with a single face plate reinforced by parallel webs on one side, or with a pair of parallel face plates interconnected by such webs, is formed by removably inserting one or more web-forming profiles in slots of a pressure-resistant supporting plate, these profiles having flange portions coming to rest against opposite surfaces of that plate; two sheets are then placed on the plate surfaces in contact with these flange portions, and the resulting stack is repeatedly passed at elevated temperatures between one or more roller pairs whereby the sheets are laminated under heat and pressure onto the profile or profiles to form two symmetrical panels or a single panel upon removal of the composite from the supporting plate.

3,590,467

METHOD FOR BONDING A CRYSTAL TO A SOLID DELAY MEDIUM

John R. Chase, and John A. Rimer, both of Bradford, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 15, 1968, Ser. No. 776,190
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.7 12 Claims



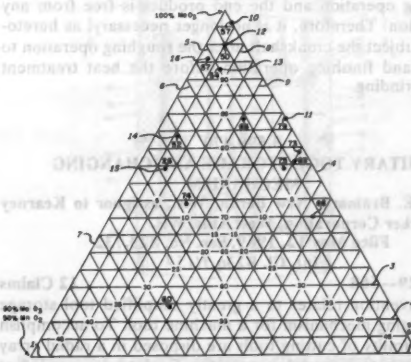
A method by which metallic base layers are first deposited on the mating surfaces of a crystal and delay medium which layers are suitable for bonding with indium. Thereafter, a layer of indium is deposited on at least one of the mating surfaces in a substantially nonoxidizing environment. The mating surfaces are then pressed together at a pressure of at least 90 p.s.i. while the indium is heated to a molten state and maintained in such a condition for at least 15 seconds. Thereafter, the temperature of the indium is reduced below its melting point to solidify the indium and form the bond.

3,590,468

GLASSY PHASE METHOD FOR MAKING PURE ALUMINA-TO-METAL HERMETIC SEALS

Robert W. Buck, Wheat Ridge, Colo., assignor to Sperry Rand Corporation

Filed Feb. 19, 1969, Ser. No. 800,649
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 9 Claims



A method is described for making reliable hermetic seals between essentially pure alumina and metal. The method comprises applying a metallizing paint to the alumina, sintering the metallizing paint, placing a molybdenum trioxide-manganese dioxide coating on the metallizing layer, sintering the coating, and then bonding the metal to the coated alumina. The metallizing paint comprises molybdenum trioxide and a glass frit in an alcohol suspension containing a nitrocellulose binder, the glass frit constituting from about 2 percent to about 40 percent of the paint by weight.

3,590,469

METHOD FOR MACHINING THE STROKE BEARINGS AND LINE BEARINGS OF A CRANK SHAFT

Hans Gunther Rohs, 9 Richard-Wagner Strasse, 7324 Rechberghausen, Germany

Filed Oct. 16, 1969, Ser. No. 866,922
Claims priority, application Germany, Oct. 17, 1968, P 18 03 703.1
Int. Cl. B23p 13/04
U.S. Cl. 29—558 2 Claims

The line bearings and stroke bearings of a crankshaft are machined consecutively starting with the line bearing adjacent to one end of the crankshaft and proceeding bearing by bearing towards the other end of the crankshaft. In this operation the section of the crankshaft between the bearing in cutting engagement with the tool or tools and the other end of the crankshaft is left radially unsupported and free to undergo any deformation that may result from the removal of stock by the tools, whereas the other section of the crankshaft including the bearing machined in the preceding operation is held by engagement with suitable clamping means. As a result of this method any distortion of the character just explained is eliminated by the subsequent machining operation and the end product is free from any deformation. Therefore, it is no longer necessary, as heretofore, to subject the crankshaft after the roughing operation to a truing and finishing operation before the heat treatment and the grinding.

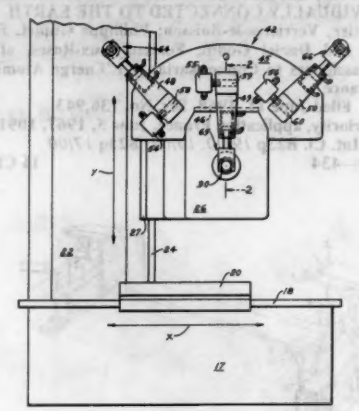
3,590,470

UNITARY TOOL STORAGE AND CHANGING MECHANISM

Wallace E. Brainard, New Berlin, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed May 12, 1969, Ser. No. 823,732
Int. Cl. B23q 3/157
U.S. Cl. 29—568 12 Claims

This invention relates to a greatly simplified tool storage and changing mechanism for a machine tool. To accomplish this, a plurality of cutting tools are disposed in a radial array relative to a tool receiving operator. Each tool is carried at the outer end of a single pivotal support with each respective support being individually pivotal to insert a tool carried thereby into the tool operator. After insertion by a single movement of its associated support, securing means are actuated to releasably secure the inserted tool to the operator for performing a desired machining operation. The inserted tool can be returned to a parked or storage position by simply releasing the securing means and pivoting the associated tool support outwardly for returning the tool carried thereby to stored position. In other words, each tool support is pivotal in one direction for inserting a tool into the operator, and is pivotal in open direction for inserting a tool into the operator, and is pivotal in the opposite direction for returning that tool to a radially disposed storage position.

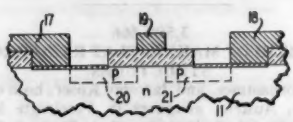


3,590,471

FABRICATION OF INSULATED GATE FIELD-EFFECT TRANSISTORS INVOLVING ION IMPLANTATION

Martin P. Lepselter, New Providence, and Alfred U. MacRae, Berkeley Heights, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 4, 1969, Ser. No. 796,404
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 4 Claims



An insulated gate field-effect transistor is made which utilizes both Schottky barrier connections and ion-implanted zones. The resultant structure incorporates source and drain zones, which are formed by ion implantation and whose spacing is fixed by the gate electrode, and source and drain electrodes which make ohmic connection to the implanted source and drain zones and rectifying connections to unimplanted material.

3,590,472

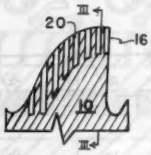
COMPOSITE MATERIAL FOR MAKING CUTTING AND ABRADING TOOLS

Joy R. Nix, Fort Worth, Tex.; Michael R. Sargent, Raleigh, N.C., and William T. Kaarlela, Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth Division, Fort Worth, Tex.

Filed Apr. 24, 1968, Ser. No. 723,657
Int. Cl. B26d 1/00; B24d 5/00; B21k 21/00
U.S. Cl. 29—103 1 Claim

A superindurate, texturally stable abrasive composite material useful in the making of cutting and abrading tools, such as oil well drills, industrial metal cutting bits, mills, planar knives and abrasive grinders. The superficies of the object tool is comprised of the outer face of a tough matrix material and the projecting ends of a preferentially oriented indurate fibers or filaments, such as boron or the indurate intermetallic compounds of boron endowed with a hardness closely approaching that of industrial diamonds, which have

been dispersed in collocated array and embodied within a tough matrix material such, for example, as in a sponge iron matrix which has been briquetted in the configuration of the object tool and then heated at temperatures sufficient for incipient fusion to occur to form the composite tool. Other ductile metals such as aluminum, nickel and cobalt, including



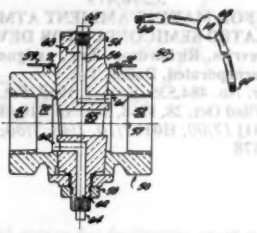
certain of their alloys, together with steel and titanium are further examples of matrix materials which may be employed. The indurate filaments are so dispersed and collocated that the outer ends of the fibers or filaments are aligned normal to the tool's work-taction surface and consequently to the surface of the object material to be cut or abraded.

3,590,473

METHOD OF MANUFACTURING HYDRAULIC VALVE WITH FLUID METER CONNECTIONS

Gilbert Fritz Carlson, Skokie, Ill., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Mar. 14, 1968, Ser. No. 718,295
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157.1 **7 Claims**



The rotor in a square cock head valve has the usual main fluid passage. In addition, it also has upstream and downstream orifices communicatingly connectably to a meter attachment point on the valve rotor. This way, a meter may be attached or removed by merely closing the main valve. There is no need to provide pressure tapping valves for controlling the flow of fluids when the meter is attached to or removed from its connections with the housing. When the meter is not attached, nonleaking plugs seal off the valve.

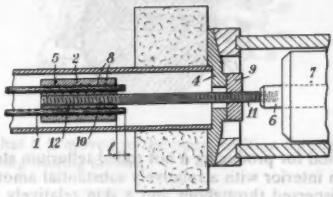
3,590,474

METHOD OF ANCHORING PRE-STRESSED WIRE ROPES

Rene Beghi, Bois Colombes, France, assignor to Societe Des Grands Travaux De Marseille, Paris, France

Filed Feb. 14, 1968, Ser. No. 705,381
Claims priority, application France, May 19, 1967, Dec. 27, 1967, 107,013; 133,900
Int. Cl. B21d *39/00*
U.S. Cl. 29—452 **7 Claims**

To obtain a prestressed anchorage of wire ropes in concrete works, a barrel-shaped cylindrical anchoring socket is used in which preferably parallel through passages are formed, these passages being adapted to receive the wire rope strands of which the free projecting ends are secured to an anchoring head on which the tensioning traction is exerted until the socket can be fastened to the work. The strand or wire rope fastening to said anchoring head may be



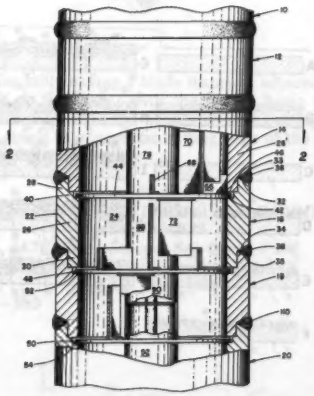
replaced by that of a screw-threaded rod rigid with, and projecting coaxially from, said socket.

3,590,475

METHOD OF MAKING CONTACTING COLUMN

Jacob M. Geist, Allentown; Roy A. Paul, Bethlehem, Pa., and Robert M. Thorogood, West Horsely, Surrey, England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of application Ser. No. 585,796, Oct. 11, 1966, now abandoned. This application June 2, 1969, Ser. No. 829,469
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **2 Claims**



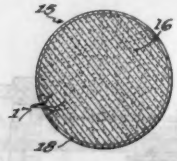
Disclosed in a small diameter contact column having a vertical series of contact chambers separated by perforate plates. Fully erected columns of this type are substantially inaccessible for subsequent placement and attachment of internal parts. The column is achieved by superimposing a plurality of interengaging cylindrical sections adapted along their outermost engaging edges to be rigidly joined and along their innermost engaging edges to receive and support a perforate plate. The perforate plate support means permits free relative movement of the plate due to temperature change and at the same time prevents liquid from passing between the column wall and the peripheral edge of the perforate plate.

3,590,476

METHOD FOR PRODUCING A TELLURIUM STEEL ARTICLE

Bernard S. Levy, Chicago, and Gary W. Henger, Homewood, both of, Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Feb. 27, 1969, Ser. No. 802,798
Int. Cl. B23k 19/00; B23p 17/00
U.S. Cl. 29—527.7 7 Claims



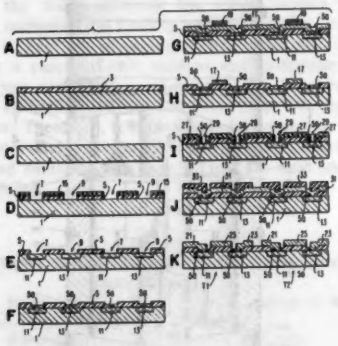
A method for producing a hot rolled tellurium steel article having an interior with a relatively substantial amount of tellurium dispersed throughout and a skin relatively devoid of tellurium and free of surface checking. The article is hot rolled from an ingot to which tellurium is added after a solid skin has formed on the sides of the ingot mold. When made from rimming steel, the article is not only highly machinable but also readily extrudable.

3,590,477

METHOD FOR FABRICATING INSULATED-GATE FIELD EFFECT TRANSISTORS HAVING CONTROLLED OPERATING CHARACERISTICS

George Cheroff, Peekskill, and Frederick Hochberg, Yorktown Heights, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 468,481, Pat. No. 3,445,924.
Filed Dec. 19, 1968, Ser. No. 798,551
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 11 Claims



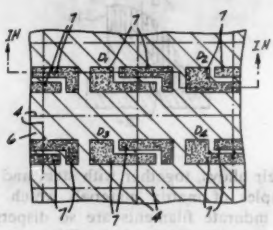
A method for fabricating electrical circuit components, field effect transistors, for example, in which the operating characteristics of the field effect devices are tailored by eliminating or passivating surface traps along the conduction channel. A layer of an active metal aluminum, for example, is deposited on the surface of an insulator, the latter being disposed in overlying relationship with the surface of a field effect transistor which has spaced source and drain regions. The active metal is disposed between the source and drain region. The transistor is subjected to heating for a time and temperature sufficient to passivate or eliminate surface traps. By heating for a temperature in a specified range, varying degrees of passivation can be attained. Heating in the absence of metallization does not alter the operating characteristics of the insulated gate field effect transistor.

3,590,478

METHOD OF FORMING ELECTRICAL LEADS FOR SEMICONDUCTOR DEVICE

Yoshito Takehana, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 20, 1968, Ser. No. 730,412
Int. Cl. B01g 17/00; H01l 5/00
U.S. Cl. 29—578 8 Claims



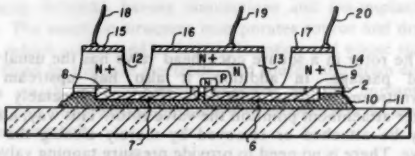
In the method of forming electrical leads for a semiconductor device, an insulating layer is formed on the area of a semiconductor substrate except at the electrode portion of each semiconductor element, and a parting or releasing agent is then coated over the insulating layer and electrical leads for the said respective elements are then fixed to the substrate in the positions where they extend over the semiconductor substrate of another or other elements. The semiconductor substrate is then divided into respective semiconductor elements and as a result, a semiconductor device, in which electrical leads are projecting outwardly from the circumference of the semiconductor element to which the leads are fixed, is provided.

3,590,479

METHOD FOR MAKING AMBIENT ATMOSPHERE ISOLATED SEMICONDUCTOR DEVICES

Dale Byron Devries, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 484,535, Sept. 2, 1965, Pat. No. 3,475,664.
Filed Oct. 28, 1968, Ser. No. 810,412
Int. Cl. B01j 17/00; H01l 7/10, 7/48, 5/00, 7/12, 7/54
U.S. Cl. 29—578 5 Claims



Disclosed are methods for making integrated circuits which use the ambient fabrication atmosphere as an isolation medium between elements of the circuit, such methods advantageously produce devices having improved mechanical structure, improved surface area for attaching lead wires, reduced collector area, and lower stray capacitance.

3,590,480

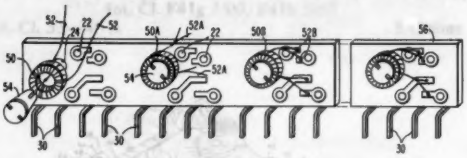
METHOD OF MANUFACTURING A PULSE TRANSFORMER PACKAGE

Theodore H. Jr. Johnson, Poughkeepsie; Charles H. Locke, Wappingers Falls; Paul V. Robock, Hopewell Junction, and Raymond D. Sueiflow, Wappingers Falls, all of, N.Y.

Filed Oct. 3, 1968, Ser. No. 764,810
Int. Cl. H01f 7/06
U.S. Cl. 29—605 11 Claims

A pulse transformer assembly including a wound core at-

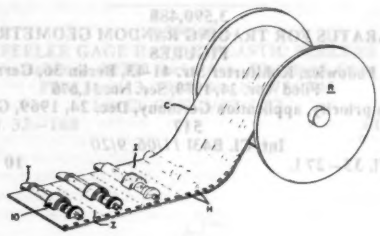
tached to a printed circuit board. Contact leads are attached to the printed circuit and the entire assembly, except for the leads, is encapsulated.



3,590,481
METHOD AND MEANS FOR FACILITATING RAPID TERMINATION OF COAXIAL CONNECTORS

Paul John Felty, Hershey, Pa., and Herbert Rosengren, Woodcliff Lake, N.J., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 721,997, Apr., 1968. This application Jan. 17, 1969, Ser. No. 792,054
Int. Cl. H01b *13/00;* **H05k** *3/00*
U.S. Cl. 29—624 **8 Claims**



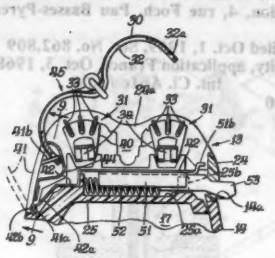
A method and means for facilitating rapid termination of coaxial connectors to coaxial cable is disclosed which features a thin, flexible carrier containing a series of coaxial connectors, each comprised of a number of distinct elements properly arranged on the carrier for insertion of coaxial cable therein. The carrier is comprised of plastic sheets formed to extend over the connectors in a manner to guide cable parts into the connector elements. The carrier has characteristics to permit reeling and is indented to facilitate removal of one or a number of connectors therefrom. The sheets may be sealed to protect each connector with each portion containing a set of connector elements including means facilitating removal of a portion of the sheets to permit insertion of a cable within the elements. The arrangement of elements on the carrier is made to facilitate terminating connector elements to cable parts without having to physically handle any of the elements of the connector.

3,590,482
COMB SUPPORT AND RELEASE MECHANISM FOR ELECTRIC DRY SHAVER

Francis L. Carr, Downers Grove, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed June 6, 1969, Ser. No. 831,129
Int. Cl. B26b *19/38*
U.S. Cl. 30—34.1 **5 Claims**

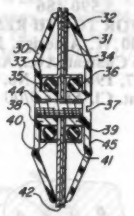
A head for an electric dry shaver having a perforated comb which is pivotally supported so that it may be moved between an operative position in engagement with movable cutter means and an open position in which it is displaced from the movable cutters to facilitate cleaning. Pushbutton operated means slidably arranged within the head release and the comb so that it is moved to the open position through the action of spring biasing means.



3,590,483
SHIELDED KNIFE

Harry Szczepanski, 755 Oakleigh, N.W., Grand Rapids, Mich.

Filed June 24, 1968, Ser. No. 739,435
Int. Cl. B26b *29/02*
U.S. Cl. 30—151 **2 Claims**

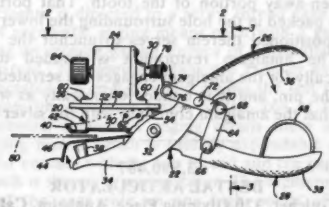


A knife assembly having a blade disposed adjacent a shield and secured to a handle, with the shield being resiliently mounted with respect to the handle so that cutting pressure retracts the shield to expose the cutting edge of the blade.

3,590,484
COMBINATION REGISTERING AND COUNTING MECHANISM

John Walsh, 4676 Thirty-Second, San Diego, Calif.

Filed Jan. 28, 1969, Ser. No. 794,491
Int. Cl. B26f *1/36*
U.S. Cl. 30—363 **4 Claims**

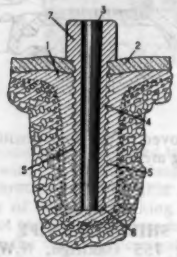


A combination registering and counting mechanism which includes a register, such as a hand actuated punch. One of the elements of the register is movable relative to another element and one of the elements carries a counter connected with and advanced by the movement of the movable element.

3,590,485
DENTAL IMPLANT

Raphael Chercheve, 5, avenue de l'Opera, Paris; Michel Chercheve, 5, avenue du General Delestraint, Paris, and Robert Bordon, 4, rue Foch, Pau Basses-Pyrenees, all of, France

Filed Oct. 1, 1969, Ser. No. 862,809
Claims priority, application France, Oct. 3, 1968, 168,664
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 **11 Claims**

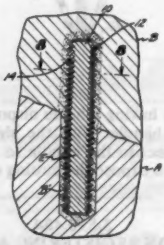


Dental implant comprising a central metallic rod encircled by a sleeve of solid animal tooth.

3,590,486
DENTAL PIN FOR TOOTH RESTORATION

I. Edward Brenner, 800 W. Amerige, Fullerton, Calif., and Ernest A. Beck, 1826 Chateau Ave., Anaheim, Calif.

Filed July 7, 1969, Ser. No. 839,183
Int. Cl. A61c *9/00*
U.S. Cl. 32—15 **5 Claims**



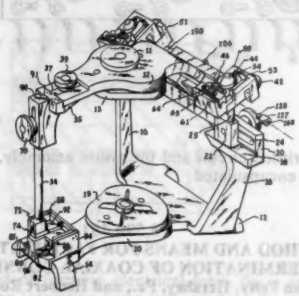
A serrated metal dental pin, the external surface of which is silver, with the lower portion thereof being adapted to be disposed in an opening of slightly larger transverse cross section formed in a broken tooth to be restored by amalgam. The amalgam is shaped to conform to the configuration of the broken-away portion of the tooth. That portion of the amalgam packed in the hole surrounding the lower portion of the pin positioned therein serves to anchor the pin to the tooth. The amalgam restoration is bonded to the pin mechanically for the amalgam engages the serrated outer surface of the pin, and it is bonded chemically as well, due to the fact that the amalgam combines with the silver of the pin.

3,590,487
DENTAL ARTICULATOR

Niles F. Guichet, 320 Olympia Place, Anaheim, Calif.

Continuation-in-part of application Ser. No. 670,138, Sept. 23, 1967, now abandoned. This application Sept. 23, 1968, Ser. No. 761,596
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **17 Claims**

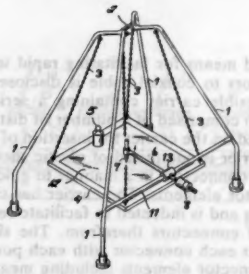
An arcon-type articulator is described with fossa guide means which permit lateral, vertical and posterior-anterior translation of rotating condyles during lateral rotation of the members. The articulator has improved incisal table means with a permanent reference rest for the incisal pin and adjustable means to permit a limited degree of relative movement of the anterior ends of the members without vertical separation.



3,590,488
APPARATUS FOR TRACING RANDOM GEOMETRICAL FIGURES

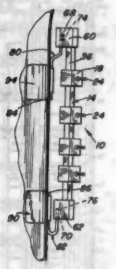
Miron Padowicz, Kohlfurter Str. 41-43, Berlin 36, Germany

Filed Apr. 24, 1970, Ser. No. 31,676
Claims priority, application Germany, Dec. 24, 1969, G 69 50 517
Int. Cl. B43l *11/06, 9/20*
U.S. Cl. 33—27 L **10 Claims**



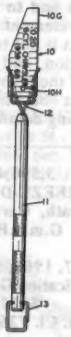
A flat support, suspended at three of more points from a frame so as to be freely swingable in two dimensions, carries a sheet on which a marker pen or other drawing tool bears under light pressure. When the support is set in eccentric motion with reference to the polygon of its suspension points, as by being laterally displaced along a line offset from the center of that polygon, it carries out a generally elliptical rotation about the suspension axis at a rate corresponding to its natural frequency and with a certain precession whereby a variety of convoluted figures can be drawn on the sheet by the stationary tool. The variety may be enhanced by eccentrically loading the support, or by placing the sheet on a motor-driven turntable mounted on the support.

3,590,489
ARCHERY BOW SIGHTING DEVICE
Charles A. Saunders, Box 102, Columbus, Nebr.
Filed Aug. 26, 1968, Ser. No. 755,257
Int. Cl. F41g 1/00; F41b 5/00
U.S. Cl. 33—46 A 5 Claims



A multiple bow sight, each sight being independently adjustable for both elevation and lateral deflection corrections, and improved nonmarring attachment band means and quick detach and reconnection means securing the sight to the archery bow.

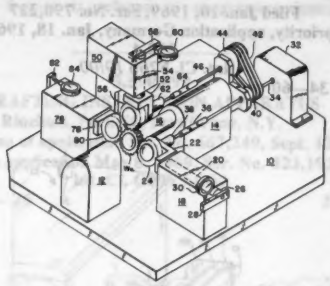
3,590,490
FEELER GAGE HAVING PLASTIC FEELERS
James A. Coleman, 12209 Socka Ave., Cleveland, Ohio
Filed June 13, 1968, Ser. No. 736,746
Int. Cl. G01b 3/30, 3/32
U.S. Cl. 33—168 3 Claims



A feeler gage for ignition points, and the like, comprises a metal handle having at its end a spring clip for holding any one of an associate plurality of individual, tapered, highly-flexible gage feelers of plastic material.

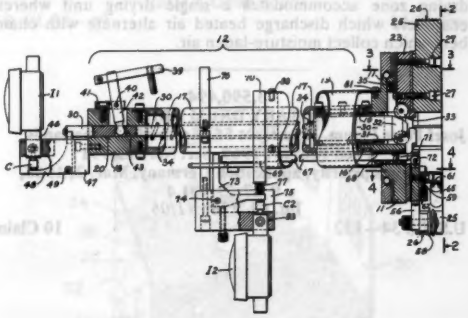
3,590,491
GAUGE FOR MEASURING GEAR TOOTH TAPER
Russell W. Anthony, Harper Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Mar. 11, 1969, Ser. No. 806,058
Int. Cl. G01b 5/24
U.S. Cl. 33—179.5 9 Claims

A gauge having master gears rotated in mesh with a work gear and in pressure contact respectively with opposite sides of the teeth of the work gear as the result of differential drives for the master gears, the master gears being each mounted for swivel movement about an axis perpendicular to



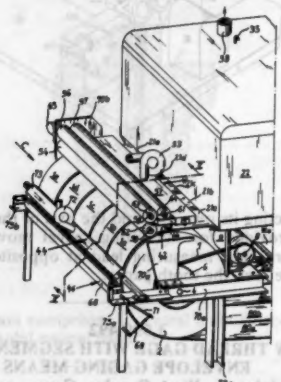
and intersecting its own axis and the axis of the gear. Indicators are provided for measuring swivel movement of the master gears, thus measuring lead at opposite sides of the teeth or in effect, the tooth paper.

3,590,492
SCREW THREAD GAGE WITH SEGMENTAL AND ENVELOPE GAGING MEANS
Lowell C. Johnson, West Granby, Conn., assignor to The Johnson Gage Company, Bloomfield, Conn.
Filed July 14, 1969, Ser. No. 841,406
Int. Cl. G01b 3/14
U.S. Cl. 33—199 10 Claims



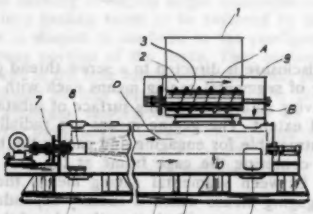
The disclosure is directed to a screw thread gage having a plurality of segmental gaging means each with a gaging element having an arcuate gaging surface of substantial circumferential extent. The gaging means are radially expandable and contractable for engaging and gaging the test thread, as well as centering the gage frame at the axis of the screw thread. Between segmental gaging means there is an envelope gaging means which is radially expandable and contractable for contact with the test thread and the gaging position of which is shown by an indicator. The segmental gaging elements of the gage ride on any high points of the test thread and gives no indication as to the form of the circular envelope of the test thread. The envelop gaging means has a gaging element with a small circumferential contact with the test thread so that when the test thread or the gage is rotated one with respect to the other, the envelope gaging means will indicate any irregularities such as lobes in the test thread and the depth thereof.

3,590,493
APPARATUS FOR PRODUCING WEBS OF RECONSTITUTED TOBACCO
Heinz Gretz, Hamburg-Bergedorf, Germany, assignor to Hauni-Werke Korber & G. Kg., Hamburg-Bergedorf, Germany
Filed Jan. 10, 1969, Ser. No. 790,227
Claims priority, application Germany, Jan. 18, 1968, P 16 57 228.4
Int. Cl. F26b 19/00
U.S. Cl. 34—60 23 Claims



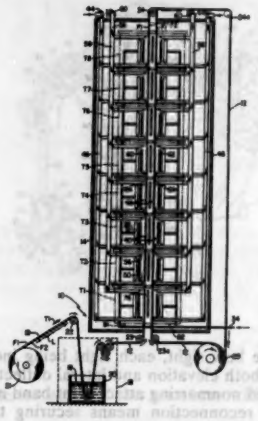
Apparatus for the production of webs of reconstituted tobacco comprises a set of endless steel belts having immediately adjacent coplanar upper stretches which receive a mass of moist tobacco containing material forming thereon a layer which is thereupon transported through a drying zone to be converted into a web of reconstituted tobacco. The drying zone accommodates a single drying unit wherein chambers which discharge heated air alternate with chambers which collect moisture-laden air.

3,590,494
ROTARY DRUM DRIER
Josef Peter Ploum, Holzstraat 55, Kerkrade, Netherlands
Filed Feb. 27, 1969, Ser. No. 802,791
Claims priority, application Germany, Mar. 2, 1968, P 17 29 431.4
Int. Cl. F26b 11/06
U.S. Cl. 34—132 10 Claims



A rotary drum drier for mud, in which stripper knife means in the form of a plane rail-shaped member are detachably and adjustably mounted on a supporting member located approximately in the horizontal central plane of the drum and also comprises guiding ribs which are arranged independently of and below said stripper knife means.

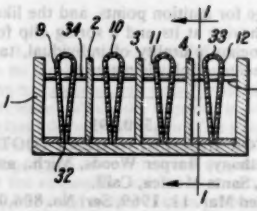
3,590,495
DRYER OR HEATER WITH SHIELDING MEANS
Davis Z. Tyson, Akron; Edward E. Hunter, Akron, Ohio, and Willie Herman Best, Columbia, S.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 2, 1969, Ser. No. 821,413
Int. Cl. F26b 13/00
U.S. Cl. 34—160 17 Claims



Apparatus for drying or heating a continuous length element, and more particularly a drying apparatus in a machine for impregnating such fiber with a liquid fiber-to-rubber adhesive coating in the manufacture of tires, belting and similar products, wherein the element is rapidly dried at a controlled temperature by flame generated infrared type heating means while (1) an adjustable shielding means controls heat flow from the heating means to the element, and/or (2) moving a gas stream rapidly over the surface of the element and shielding means to protect the heating means from the flowing gas stream against any adverse effect on the infrared radiation from the heating means and to remove heat products from the shielding means and element.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

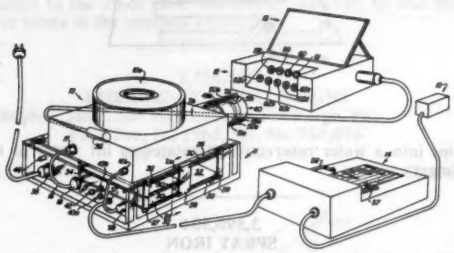
3,590,496
INSERT FOR FREEZE-DRYING APPARATUS
Hanns Eilenberg, Rosrath, Germany, assignor to Leybold-Heraeus-Verwaltung G.m.b.H., Cologne-Bayental, Germany
Filed Aug. 7, 1968, Ser. No. 750,872
Claims priority, application Germany, Aug. 23, 1967, L 57276
Int. Cl. F26b 25/10
U.S. Cl. 34—238 6 Claims



An insertable container for freeze-drying apparatus having a water-vapor-permeable channel member which forms a

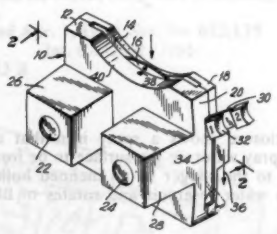
venting channel with respect to the surface of the material being dried. The channel member is in the form of a partition which extends along a horizontal dimension of the container within the fill area thereof. By this arrangement, water vapor can be drawn off from the material being dried by way of the partition. Numerous specific forms of the partition are described as well as several arrangements of the partition with respect to the container itself.

3,590,497
TEACHING AND EVALUATION MACHINE
David A. Darby, 2218 Emerson Ave, Salt Lake City, Utah
Filed Apr. 1, 1969, Ser. No. 811,814
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 **15 Claims**



A teaching and evaluation machine, wherein a slide projector is used to present informative material and/or questions and multiple possible answers to the questions and to simultaneously provide signals indicative of the correct answer to a control circuit while regulating the time allowed for answer selections. The control circuit is also connected to a test panel, or selector, having an information change button and a number of possible multiple choice selection buttons corresponding to the possible answers, and to a continuous strip chart recorder whereon selection button choices are recorded in a pattern that also indicates a correct answer, on a time basis and in conjunction with a continuous physiological response measurement of the subject being tested and/or evaluated.

3,590,498
PROGRAMMED INSTRUCTION DEVICE
Sol Landzberg, 22-18 Clentonville St., Whitestone, N.Y.
Filed May 12, 1969, Ser. No. 823,717
Int. Cl. G09b *3/06*
U.S. Cl. 35—9 R **5 Claims**

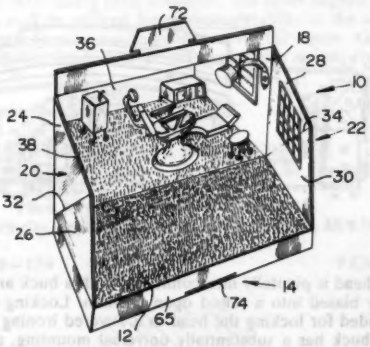


As an illustrative form of a programmed instruction device there is disclosed a viewing device in which is rotated a disc having a circular array of frames in each of which there is intelligence such as a picture or question with which are associated two or more items of intelligence such as answers or identification only one of which is correct. Two or more operational levers are provided which are associated with the plurality of information items and only one of which is capable of rotating the aforesaid disc in association with each frame depending on whether or not the properly related intelligence item is selected. If an incorrect information item is selected, the disc is not rotated and thus only operation of the proper lever for a given frame can cause rotation of the disc and advancement to the next frame. The intelligence in successive frames is related in progressive instructional order.

3,590,499
DRAFTING INSTRUCTION APPARATUS
Richard A. Rinehuls, Park St., Port Crane, N.Y.
Continuation of application Ser. No. 667,249, Sept. 12, 1967.
This application May 8, 1969, Ser. No. 823,193
Int. Cl. G09b *11/00*
U.S. Cl. 35—26 **5 Claims**

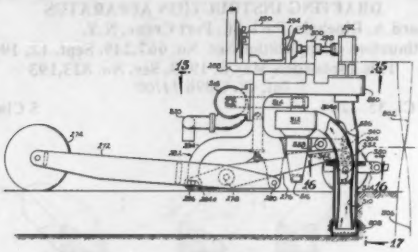
Use in the teaching of mechanical drafting courses, of a coordinated set of blocks each having the same basic overall shape, but with successive blocks provided with successively increasing numbers of surfaces by provision of holes, chamfers and the like to the basic shape, with related surfaces on the various successive blocks having similar identifying indicia, but with the newly added surface on each succeeding block having the same selected identifying indicia.

3,590,500
FLOOR COVERING DISPLAY MAILER
Jerrold A. Smith, c/o Arrow Art Finishers, 1201 Evergreen Avenue, Bronx, N.Y.
Filed Sept. 12, 1969, Ser. No. 857,523
Int. Cl. G09b *25/00*
U.S. Cl. 35—49 **12 Claims**



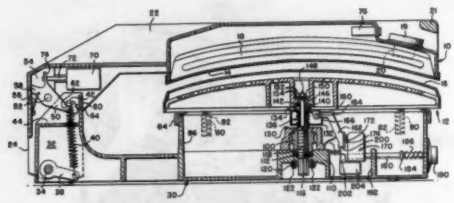
The present invention is constructed to include a cardboard tray in which a floor covering sample, e.g. a swatch snugly fits. A cardboard cover folds over the tray to cover it for mailing purposes. The sides of the cover are joined to the sides of the tray by gussets and the back of the cover is joined to the back of the tray by a fold line. A three-dimensional illusion is produced by providing a pictorial display on the inner surface of the cover, the display being erect behind the swatch when the cover is swung up. The display may be a photograph or other illustration of a room within which the floor is seemingly covered by the sample.

3,590,501
CONTINUOUS EXCAVATING AND CONVEYOR MECHANISM EMPLOYING SONIC ENERGY
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.
Continuation of application Ser. No. 531,950, Mar. 4, 1966, now abandoned. This application June 5, 1969, Ser. No. 831,278
Int. Cl. E02f *3/88, 3/62;* **E21c** *37/20*
U.S. Cl. 37—1 **8 Claims**



A combination excavator and conveyor which employs high-power sonic energy to loosen and fluidize the earthen material which is to be removed from the excavating area. Gyrating or orbital-mass sonic oscillators impart resonant standing waves to the earth cutting portion of the excavator as well as to the conveyor which carries the excavated material to a discharge location. Self-propelled and towed versions are shown. Also illustrated is an integral excavating-conveying device in which the toothed end of a sonically excited conduit is used to "nibble" the earthen surface and thereafter fluidize and propel the loosened material through the sonically vibrated conduit to a discharge location.

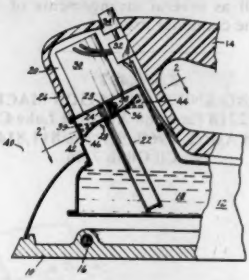
3,590,502
IRONING APPARATUS
Wolfgang Hentschel, Munich, and Hermann Stutzle, Gilching, both of, Germany, assignors to Dornier G.m.b.H., Friedrichshafen 1 Bodensee, Germany
Filed May 2, 1969, Ser. No. 821,340
Int. Cl. D06f *71/00, 71/28*
U.S. Cl. 38—28 **5 Claims**



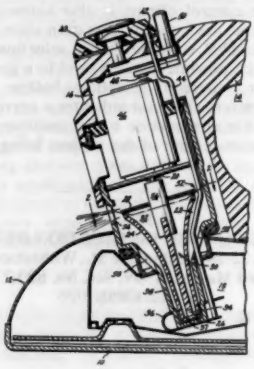
A head is pivotally interconnected with a buck and is normally biased into a raised open position. Locking means is provided for locking the head in a lowered ironing position. The buck has a substantially universal mounting, and drive means is provided for moving it toward and away from the head. A lost motion connection is provided between the drive means and buck and is interconnected with a control means for deactivating the drive means when a predetermined pressure is applied to the material being ironed independent of the thickness of such material.

3,590,503
SPRAY IRON
Alfred G. Swenson, 1304 N. Campus Ave., Ontario, Calif.
Filed Dec. 8, 1969, Ser. No. 882,835
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.1 **11 Claims**

The disclosure shows a spray iron that uses a disclike slinger to spray water on the surface to be ironed. The water is directed to the slinger by an inclined hollow tube which dips into a water reservoir and rotates to lift water to the slinger.



3,590,504
SPRAY IRON
William E. Davidson, Ontario, Calif., assignor to General Electric Company
Filed Dec. 8, 1969, Ser. No. 882,836
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.1 **9 Claims**

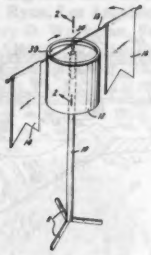


The disclosure shows a spray iron that uses a disclike slinger to spray water on the surface to be ironed. The water is directed to the slinger by an inclined hollow tube which dips into a water reservoir and rotates to lift water to the slinger.

3,590,505
ROTATABLE DISPLAY DEVICE
Robert Benchley, Jr., Noroton, Conn., assignor to Trans-World Display Corporation
Filed July 23, 1969, Ser. No. 843,932
Int. Cl. G09f *11/02*
U.S. Cl. 40—33 **8 Claims**

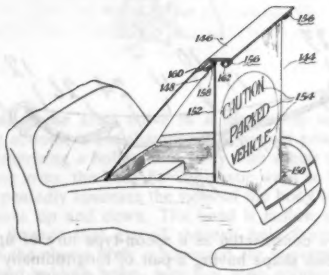
A display device including a stationary bracket provided with one or more openings each loosely accommodating a spherical ball. Two rotatable plates, on opposite sides of the bracket, sandwich the balls between them. Each plate carries

a display member. A motor rotates one of the plates and its display member in one direction, and the balls transmit the



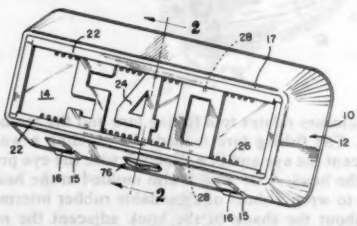
rotation to the other plate and display member, so that the latter rotate in the opposite direction.

3,590,506
EMERGENCY VEHICLE SIGNS
Rudolph S. Jeski, 326 Meyran Ave., Pittsburgh, Pa.
Filed Dec. 16, 1968, Ser. No. 784,076
Int. Cl. G09f 7/00, 1/00
U.S. Cl. 40—129 **4 Claims**



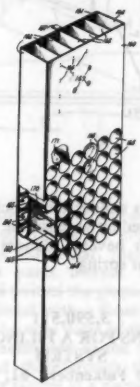
I disclose a sign structure comprising a plurality of foldable sign panels, hinge means joining said panels along junction means therebetween, leg means hingedly joined to the outer ones of said panels, stabilizing means mounted on said sign structure for stabilizing said panels in an operative unfolded mode, and restraining means coupled to said leg means for restraining said leg means to a predetermined extent of movement relative to said sign structure.

3,590,507
HOUSE MARKING DEVICE
Winfred D. Wren, c/o Wren, Inc., 1024 S. Kealing Ave., Indianapolis, Ind.
Filed Apr. 1, 1969, Ser. No. 812,139
Int. Cl. G09f 13/06
U.S. Cl. 40—133 B **4 Claims**



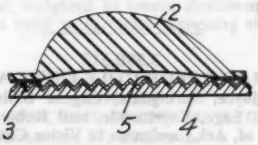
A house marking device which is provided with a baseplate having means for supporting a light and battery assembly thereon. A housing having a translucent faceplate is swingably connected to said baseplate and extends thereover. Opaque indicia are removably supported on said faceplate and are thus silhouetted thereagainst in daylight and are likewise silhouetted thereagainst in darkness when said light and battery assembly is actuated.

3,590,508
TRAVELING SIGN CONTROLLED BY LOGIC CIRCUITRY AND PROVIDING A PLURALITY OF DIGITAL DISPLAY EFFECTS
Clifford M. Jones, Waynesboro, Va., and John D. Harnden, Jr., Schenectady, N.Y., assignors to General Electric Company
Division of Ser. No. 449,177, Apr. 19, 1965, Pat. No. 3,432,846.
Filed Nov. 22, 1968, Ser. No. 778,218
Int. Cl. G09f 13/00
U.S. Cl. 40—132 D **8 Claims**



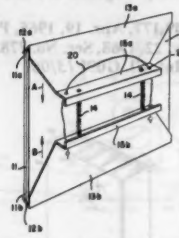
A cover member for separating the illumination effects of adjacent lamps on an electrical display sign containing lamps arranged in columns and rows also provides cooling of the lamps by natural convection. The cover member includes a front and back cover plate member provided with apertures for the lamps on the sign which protrude into the space between the cover plate members. Horizontally and vertically positioned intervening plate members, and tubes aligned with the lamps may be utilized for providing rigidity to the cover assembly and forming cooling channels for the lamps. An optical link system controls a second display sign remote from a first sign.

3,590,509
LIGHT-REFLECTIVE DISPLAY DEVICE
Minoru Fukumitsu, c/o James M. Morita, City Bank Bldg., Honolulu, Hawaii
Filed July 25, 1969, Ser. No. 844,924
Claims priority, application Japan, July 25, 1968, 43/63962
Int. Cl. G09f 7/00
U.S. Cl. 40—136 **7 Claims**



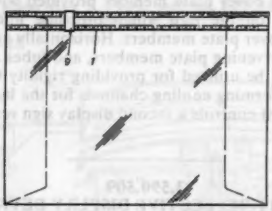
Concave lens elements are formed in a sheet of plastic in the form of letters or the like and are filled in with transparent plastic. A backing of embossed and metallized plastic sheet is provided for light-reflecting purposes. An intermediate colored and transparent sheet can also be employed to color the reflected light.

3,590,510
DISPLAY MOUNT FOR FLAT ARTICLES
Theodore Salz, 247 Parkview Ave, Bronxville, N.Y.
Filed Apr. 25, 1969, Ser. No. 819,235
Int. Cl. G09f *1/12*
U.S. Cl. 40—155 **9 Claims**



A mirror, picture or similar flat article of rectangular outline is positively gripped on at least one pair of opposite sides by two brackets with beveled flanges drawn toward each other by clamps and/or springs.

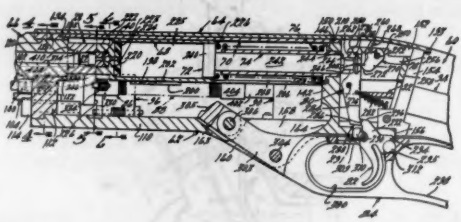
3,590,511
INDEXING MEANS FOR A FILING OR PLANNING SYSTEM
Egon Heimann, 5600 Falkenberg 61, Wuppertal-Elberfeld, Germany
Filed Oct. 6, 1969, Ser. No. 866,424
Claims priority, application Germany, Sept. 26, 1969, P 17 86 383.1
Int. Cl. B42f *21/00*
U.S. Cl. 40—359 **4 Claims**



Indexing means with a self-sealing layer, for a filing or planning system which relates, in particular, to a graduated strip for attachment to filing folders, index cards, planning boards or the like and having tabs which are displaceable along the strip.

3,590,512
AIR-OPERATED PROJECTILE-FIRING APPARATUS
Ronald W. Joyce, Springdale; Eugene Billingslea, Rogers; Leopold C. Sage, Fayetteville, and Robert K. Marshall, Rogers, all of, Ark., assignors to Victor Comptometer Corporation, Chicago, Ill.
Division of Ser. No. 739,575, Mar. 29, 1968, which is a division of application Ser. No. 598,087, Nov. 30, 1966, now Patent No. 3,399,596. Filed Apr. 3, 1969, Ser. No. 815,256
Int. Cl. F41c *13/00*
U.S. Cl. 42—39.5 **4 Claims**

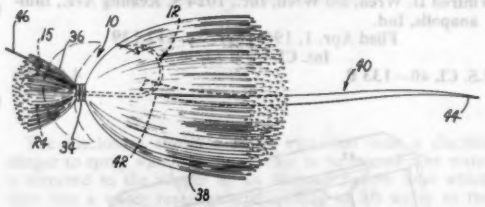
There is herein disclosed a firearm-ammunition-loading apparatus comprising a pivotally movable ammunition-holding member having an ammunition chamber alignable with a loading port in a pivotally movable loading member in a loading position. The loading port is blocked by an abutment surface on the ammunition-holding member until the loading position is reached. The ammunition magazine is connected to the loading member by a flexible tube movable therewith.



3,590,513
FISH LURE
Robert N. Lund, 6006 Darramoor Road, Birmingham, Mich.
Filed Sept. 21, 1968, Ser. No. 754,390
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.06 **2 Claims**

A fish lure constructed as a spoon-type lure of upwardly presenting dish shape having a pair of longitudinally spaced transverse openings therein. The water through which the lure is drawn will pass through the openings to produce side-to-side oscillating movement as well as an up-and-down movement to the lure.

3,590,514
FISHING LURE AND METHOD FOR MAKING
Daniel P. Begley, 510 Willow St., Shafter, Calif.
Filed July 3, 1969, Ser. No. 839,030
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.53 **7 Claims**



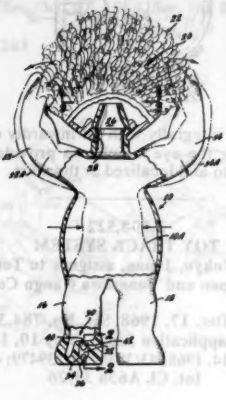
This disclosure relates to a fishing lure and the method for making it. The fishing lure is made by molding a weighted head adjacent the eye end of a fishhook with the eye protruding from the head. A tie wire is also molded in the head and is utilized to wrap a sheet of shreadable rubber intermediate its ends about the shank of the hook adjacent the molded head. The rubber is then shredded at its ends to form a shredded hook skirt which covers and extends beyond the barb end of the hook and a neck skirt which projects outward from the point of wrap adjacent the molded head. A flexible tail may be added by impaling its lead end with the barb of the hook.

3,590,515

SHAMPOO DOLL

Ronald A. Clark, Rolling Hills Estates; Stephen Lewis, Pacific Palisades; John W. Ryan, Los Angeles; Wallace H. Shapero, Torrance, and Larry D. Workman, Fountain Valley, all of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 16, 1969, Ser. No. 866,897
Int. Cl. A63h 33/28
U.S. Cl. 46—6 6 Claims



A doll whose arms move in a manner to simulate hair washing actions, while shampoolike foam is produced in its hair, comprising a hollow doll body with a pair of upwardly extending arms, the body having elastic walls so that when a child repeatedly squeezes the sides of the body together, the arms move up and down. The head is hollow and has numerous threads that extend through hole therein to form hair. As the elastic body is squeezed, air is pumped through the thread-holding holes, and if a soap solution has been spread on the hair, the air flowing through the holes creates foam in the hair.

3,590,516

LEG ASSEMBLY FOR A FIGURE TOY

Ralph Dunn, Manhattan Beach, and Armando P. Villasana, Los Angeles, both of, Calif., assignors to Mattel, Inc., Hawthrone, Calif.

Filed Mar. 27, 1970, Ser. No. 23,149
Int. Cl. A63h 33/00
U.S. Cl. 46—22 7 Claims

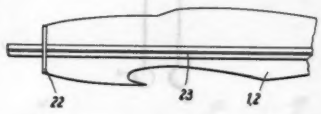
A pair of legs connected together by a bight portion received in a stirrup on a cylindrical member adapted to be engaged in the leg-receiving aperture of a figure toy having a pair of arms and hands extending generally vertically from the top of its head so that the figure toy may be inverted and stood on its hands.

3,590,517

MOTOR DRIVEN MODEL AIRPLANE

Ulrich Regehr, Laurensberg, and Roland Dietel, Aachen, both of, Germany, assignors to Simprop-Electronic, Harsewinkel, Germany

Filed Jan. 31, 1969, Ser. No. 795,442
Claims priority, application Germany, Sept. 10, 1968, P 17 28 001.2
Int. Cl. A63h 27/00
U.S. Cl. 46—76 6 Claims



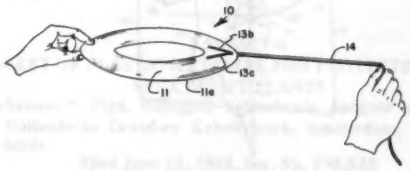
This disclosure relates to a motor-driven model airplane that can be put together from a few prefabricated individual parts and which has particular features for preventing damage to the vital parts thereof during impact. The fuselage, wings and tail unit of the plane are formed of plastic half shells which are lined with a foam plastic material. Impact loads applied to the vital parts of the plane as a result of crashes thereof are transmitted to the foam plastic material and evenly distributed therethrough thereby reducing the possibility of an impact failure at a particular point in the airplane.

3,590,518

FLYING SAUCER CRAFT

Ross W. LeBaron, Salt Lake City, Utah, assignor to Wham-O Mfg. Co., San Gabriel, Calif.

Filed Oct. 8, 1968, Ser. No. 765,823
Int. Cl. A63h 27/14
U.S. Cl. 46—81 9 Claims



A flying craft simulating a "flying saucer" and comprising an aerodynamically stable circular body made of lightweight flexible material, weighted to insure directional travel and provided with a hook to facilitate launching should this be desired.

3,590,519

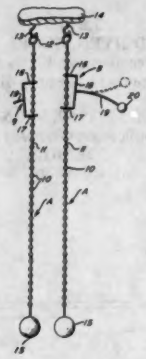
BEADED CHAIN-DESCENDING TOY

Athelstan F. Spilhaus, Box 37, Gladwyne, Pa.

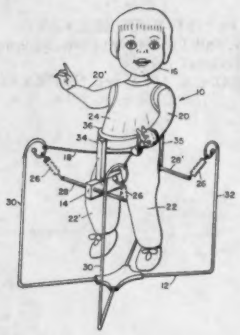
Filed Jan. 23, 1969, Ser. No. 813,783
Int. Cl. A63h 11/4
U.S. Cl. 46—132 9 Claims

This amusement device comprises a beaded chain string vertically under tension on which an action member is mounted for incremented descent thereupon. The action member comprises two loops fixedly and vertically displaced by a connector having a length such that when one loop surrounds a major diameter of one bead, the other loop is positioned between two other beads. The loops have internal

diameters larger than the beads. There is a mechanical oscillator coupled laterally to the connector which, when oscillating, rocks the loops alternately from one side to another thereby enabling incremental descent of the action member.



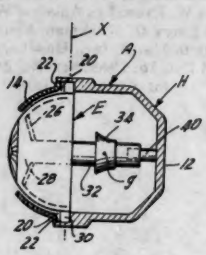
3,590,520
SELF-ACTUATED ROCKING AMUSEMENT DEVICE
Patrick M. Tomaro, Maplewood, N.J., assignor to Remco Industries, Inc., Harrison, N.J.
Filed Aug. 29, 1969, Ser. No. 854,045
Int. Cl. A63h *13/18*
U.S. Cl. 46—147 **10 Claims**



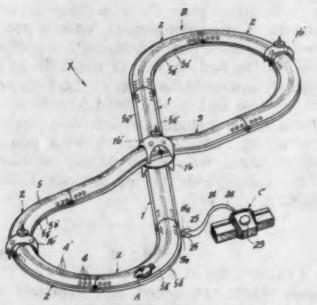
A self-actuated rocking amusement device is described wherein a toy such as a rocking doll having automatically reciprocating limbs is positioned on a support such as a seat which is resiliently supported from a frame. A member of the toy such as a doll limb is connected by an easily attachable tether to the frame. Tether connected limb motions thus induce rocking motions of the doll toy with motions of the other doll limbs being effective to enhance rocking of the doll.

3,590,521
SIDE-TO-SIDE ROLLING DOLL EYE
Harvey W. Samo, Maplewood, N.J., assignor to Margon Corporation, Rahway, N.J.
Filed Mar. 18, 1969, Ser. No. 808,138
Int. Cl. A63h *3/40*
U.S. Cl. 46—167 **6 Claims**

A side-to-side rolling doll eye assembly mounted in a housing for pivotal rolling movement therein about a vertical axis, the eye member comprising a transparent doll eye component embodying a front lens part having a reflective iris portion and a transparent pupil portion. The pupil portion of the eye is formed integrally with an inwardly extended stem and the weight for the eye member is provided by a weight element attached to and localized at the stem.

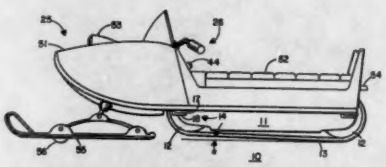


3,590,522
TOY TRACK SYSTEM
Nobuo Hamano, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan and Yonezawa Gangu Co., Ltd., Tokyo, Japan
Filed Dec. 17, 1968, Ser. No. 784,305
Claims priority, application Japan, May 10, 1968, May 13, 1968, Oct. 14, 1968, 43/38480; 43/39479; 43/74894
Int. Cl. A63h *33/26*
U.S. Cl. 46—231 **4 Claims**



A toy track system in which an electric motor-driven toy vehicle runs on a pair of continuous conductive rails which are disposed inside a transparent tunnellike cover or dome, said conductive rails being electrically connected to an electric control box which supplies power to said rails for driving the vehicle.

3,590,523
TOY VEHICLE WITH TRACK DRIVE MECHANISM HAVING AN INTERNAL POWER SOURCE
Mathias H. Riesgraf, 4945 Pennine Pass, Minneapolis, Minn.
Filed July 2, 1968, Ser. No. 742,043
Int. Cl. A63h *17/24*
U.S. Cl. 46—243 M **17 Claims**



This application discloses a track drive mechanism which may be utilized for toys or the like. All of the necessary parts

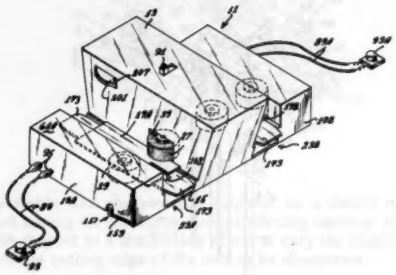
of the mechanism are physically mounted inside of an endless track. The mechanism is detachably secured to any one of a wide variety of body designs to provide a high-velocity track driven device.

3,590,524

TOY VEHICLE ACCELERATOR

Janos Beny, Manhattan Beach, and Denis V. Bosley, Palos Verdes, both of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 27, 1969, Ser. No. 869,655
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 **12 Claims**



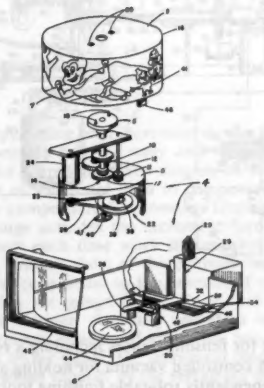
An accelerator for unpowered toy vehicles traveling along a roadway wherein a pair of oppositely turning motor-driven vehicle-engaging rollers are each rotatably mounted on pivoted levers, the levers being biased to swing toward each other and mounted opposite each other adjacent opposite sides of the roadway in order that the rollers temporarily but equally engage opposite sides of the vehicles an thereby stably accelerate the vehicles in a predetermined direction.

3,590,525

TOY MOVING-PICTURE AND AUDIO-SYNCHRONIZING MECHANISM

Patrick M. Tomaro, Maplewood, N.J., assignor to Remco Industires, Inc., Harrison, N.J.

Filed Feb. 19, 1969, Ser. No. 800,379
Int. Cl. A63h *33/26*
U.S. Cl. 46—232 **9 Claims**



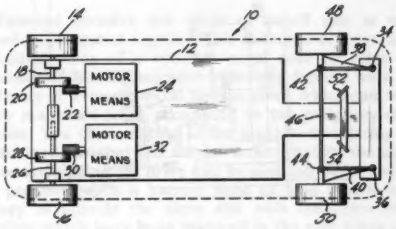
A storytelling toy is provided having a series of pictures on a drum that rotates. A record telling the story is synchronized with the rotating picture drum. The toy is designed so that the drum and voice recording are interrupted at the end of each cycle and are resynchronized through actuation of a dual action switch each time the toy is restarted. Any undesired actuation of the switch by a child, therefore, cannot cause the unit to remain out of synchronization beyond one cycle of operation.

3,590,526

REMOTELY STEERABLE VEHICLE

Herman F. Deyerl, P.O. Box 1804, Ann Arbor, Mich., and Robert J. Reynolds, 1543 Pine Valley, Ann Arbor, Mich.

Filed May 5, 1969, Ser. No. 804,555
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 B **8 Claims**



A self-propelled toy vehicle adapted for use on a track or other surface where its steering and speed may be controlled by electromechanical or electronic means. The drive wheels are independently driven at selected speeds and the driven wheels are mounted so that direction of movement of the vehicle can be controlled readily by regulating the relative speeds of the driven wheels.

3,590,527

SHEET OF PLASTIC MATERIAL FOR PROTECTION OF VEGETATIVE PLANTS

Johannes P. Pijst, Hillegom, Netherlands, assignor to N. V. Hollandsche Draad-en Kabelfabriek, Amsterdam, Netherlands

Filed June 21, 1968, Ser. No. 738,845
Int. Cl. A01g *13/02*
U.S. Cl. 47—9 **4 Claims**

A sheet of plastic material for protecting a vegetative plant, the material being air and water permeable and sensitive to light so as to be gradually disintegrated thereby.

3,590,528

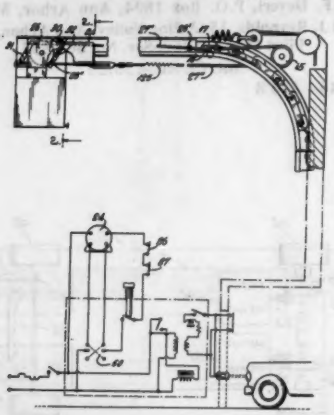
DECOMPOSABLE POLYBUTENE-1 AGRICULTURAL MULCH FILM

Thomas H. Shepherd, Hopewell, N.J., assignor to Princeton Chemical Research Inc., Princeton, N.J.

Continuation-in-part of application Ser. No. 777,921, Nov. 21, 1968, now abandoned , which is a continuation of application Ser. No. 592,981, Nov. 9, 1966, now abandoned. This application Sept. 25, 1969, Ser. No. 861,155
Int. Cl. C08f *3/02, 45/58*
U.S. Cl. 47—9 **1 Claim**

Polybutene-1 film for use as an agricultural mulch. This film degrades and substantially disintegrates of its own volition within a growing season.

3,590,529
GARAGE DOOR UP-RETURNER AND CIRCUIT BREAKER
Frederick A. Purdy, 870 United Nations Plaza, New York, N.Y.
Continuation-in-part of application Ser. No. 401,264, Oct. 2, 1964, now Patent No. 3,444,344. This application Mar. 18, 1969, Ser. No. 808,637
Int. Cl. E05f *15/20, 15/16*
U.S. Cl. 49—28 **13 Claims**



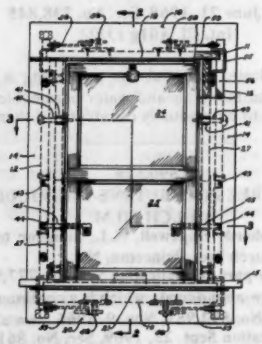
An Up-Returner for an obstructed downwardly moving overhead garage door; a Circuit Breaker, two-directional.

I. At an operator for driving an overhead garage door open or closed; a door, moving downward toward closed position and encountering an obstruction, is automatically reversed in direction to fully reopen.

II. Integral with the parts of assembly I, is a circuit breaker to shut off an overtime-running motor by breaking the electric-supply circuit, whether motor's direction of rotation is clockwise or counterclockwise.

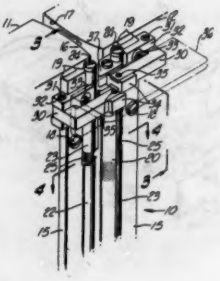
III. Improvements over prior designs.

3,590,530
TRANSVERSELY PIVOTED WINDOWS
John B. Duguay, 37 Garand St., Waterville, Mass.
Filed Jan. 9, 1969, Ser. No. 790,012
Int. Cl. E05d *15/22*
U.S. Cl. 49—161 **7 Claims**



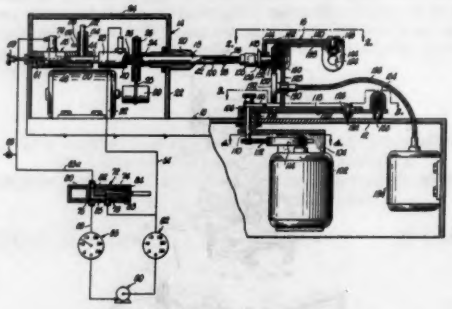
Windows are disclosed that are supported by transversely aligned pivots so that they may be turned to bring their outer faces into a position wherein they may be serviced from within the building with releasable means closing their sides against the weather and preventing the windows from being so turned.

3,590,531
ASTRAGAL
Garrett D. Childs, Fresno, Calif., assignor to Builders Brass Works Corporation, Los Angeles, Calif.
Filed May 7, 1969, Ser. No. 822,442
Int. Cl. E06b *7/16*
U.S. Cl. 49—368 **19 Claims**



An astragal for covering the gap between the adjacent edges of a double door where a leaf member is pivotally mounted along that edge of each door and a cam pivots each leaf member from an open, protruding position to a mating position with the other leaf member in the final closing movement of the door and either door can be separately opened and closed.

3,590,532
LENS FINISHING AND MODIFYING MACHINE
Lawrence Littlefield, 1208 Stratford Road, Kansas City, Mo.
Filed Mar. 6, 1968, Ser. No. 711,048
Int. Cl. B24b *7/00, 9/00, 47/00*
U.S. Cl. 51—55 **13 Claims**



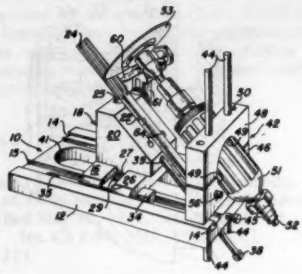
A machine for finishing lenses including a rotatable holder provided with controlled vacuum for holding and rotating the lens. An independently rotatable finishing tool is mounted for reciprocation along any of a number of arcuate paths of travel. The respective axes of rotation of the lens holder and the tool are selectively variable, and motor and cam means reciprocate the tool during various operations.

3,590,533

PORTABLE PRECISION TOOL SHARPENER

Frank R. Samson, 506 Arbor Drive, San Diego, Calif., and Paul H. Domingues, 4516 Nido Lane, San Diego, Calif.

Filed July 28, 1969, Ser. No. 845,448
Int. Cl. B24b 7/00
U.S. Cl. 51—71 1 Claim



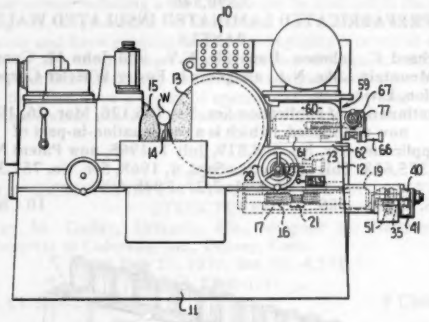
A portable tool sharpener mountable on a bench or the like and having an adjustable tool supporting carriage alignable with respect to a sharpening wheel to vary the degree and relief of the cutting edge of the tool to be sharpened.

3,590,534

WHEEL WEAR COMPENSATION

Glenn M. Snyder, Waynesboro, Pa., assignor to Litton Industries, Inc.

Filed Nov. 27, 1968, Ser. No. 779,424
Int. Cl. B24b 49/18
U.S. Cl. 51—165 6 Claims



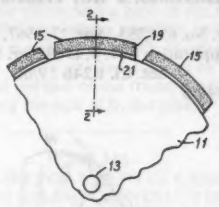
A single compensating feed increment device advances the wheel to compensate first for wear and then for truing. A counter is set for a predetermined number of wheel feed increments, some of which are used to compensate for wheel wear, others to compensate for dressing. During grinding, a post process gauge actuates the increment feed to advance the wheel support each time work size reaches a predetermined oversize amount short of the oversize limit. Each increment of advance is equal to the amount of oversize correction for which the gauge is set. Each such advance is counted by the counter. A truing operation is performed after a predetermined number of pieces has been ground. In response to the truing signal, the increment feed is actuated to advance the wheel support by the remaining increments of the predetermined number for which the counter was set. The truing tool advances a predetermined number of increments equal to the total increment advance of the wheel, and reduces wheel radius by the amount equal to the wheel advance by said remaining increments.

3,590,535

DIAMOND ABRASIVE SAW BLADE

Donald H. Benson, Spenceport, and Willard R. Pratt, Brighton, both of, N.Y., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 24, 1969, Ser. No. 818,949
Int. Cl. B24d 5/06
U.S. Cl. 51—206.4 11 Claims



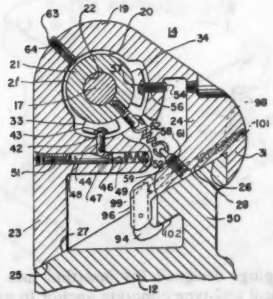
A diamond abrasive saw blade or cutoff disc in which diamond-impregnated segments are arranged at intervals on the circumference of a wrought metal core or drive disc. Each diamond-bearing segment is initially formed on a base or underlay of wrought metal such as steel, which can be accurately machined to fit accurately on the periphery of the drive disc. The close mating of the machined underlay with the machined periphery of the drive disc enables the underlay to be attached to the drive disc by electron beam welding, which produces such a narrow band of heat that it is not necessary to provide the drive disc with the conventional radial slots which have been required in the past when other types of welding had to be used. The radially outward face of the metal underlay may be notched or scalloped or otherwise nonconcentric with respect to the center of rotation of the drive disc, so that when part of the underlay wears away, the resulting exposed portion of the diamond-bearing segment will be nonconcentric to the axis of rotation and thus will tend to dissipate the swarf and minimize further wear on the region where the abrasive segment is joined to the drive disc.

3,590,536

FOOTSTOCK FOR A MACHINE TOOL

Robert C. Fisher, Milford, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jan. 23, 1969, Ser. No. 793,396
Int. Cl. B24b 5/02; B23b 23/02
U.S. Cl. 51—236 9 Claims



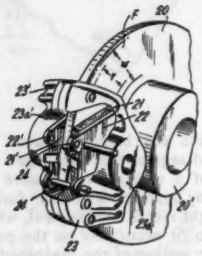
A footstock for a machine tool having housing with a lengthwise opening therein. A spindle is mounted in said opening. First spindle-supporting means is mounted in the opening adjacent a center carrying end of the spindle and engaging the side of the spindle opposed to the load on the center. Second spindle-supporting means is mounted in the opening engaging the side of the spindle on which the center

is loaded. The spindle-supporting means are advanceable transversely of the axis of the spindle for aligning the spindle and center.

3,590,537
DISC-BRAKE CLEANING APPARATUS

Erich Konigstein Hennig, and Wolfgang Kammermayer, both of Frankfurt, Germany, assignors to Alfred Teves Maschinen-und Armaturenfabrik KG, Frankfurt am Main, Germany

Division of Ser. No. 634,353, Apr. 27, 1967, Pat. No. 3,521,411. This application Nov. 4, 1969, Ser. No. 873,945
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 S **8 Claims**

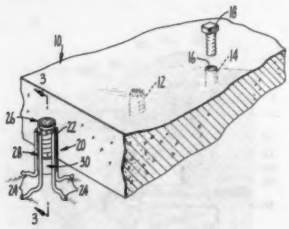


Apparatus for cleaning the braking surface of a brake disc without dismounting the disc or completely dismantling the brake installation is disclosed. A pair of grinding chocks or pads having a grindstone plaque or layer mounted upon a backing plate via a layer of thermal insulation is substituted for the brakeshoes or is retained against the discs and pressed against the area to be cleaned while the disc is rotated via an auxiliary motor frictionally engaging the periphery of the disc or through the axle of the disc.

3,590,538
PLUG CONSTRUCTION FOR USE WITH ANCHOR INSERTS SET IN CONCRETE

Jack A. Holt, San Bruno, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Filed May 19, 1969, Ser. No. 825,501
Int. Cl. E04c *5/12*; E04g *21/12*
U.S. Cl. 52—127 **16 Claims**

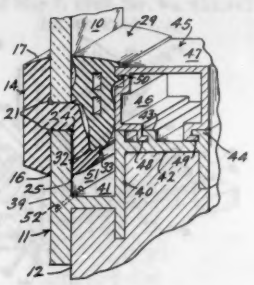


A pair of plugs designed for insertion into the opposite ends of a helical coil-type concrete anchor to prevent the intrusion of concrete into the anchor during pouring and provide for exposure of the anchor after the concrete has set. The plug for use in the end of the anchor to be exposed is of shell-like construction and carries an absorbent compressible material on its external end. The plug for use in the internal end of the anchor is made up of a body member threadably engageable in the anchor and a cuplike element designed to provide a void into which the body member may be displaced.

3,590,539
GLAZING CONSTRUCTION

Howard R. Brown, Bowling Green, Ohio, and Michael C. Rizza, Walnut Creek, Calif., assignors to The D. S. Brown Company, North Baltimore, Ohio

Filed May 21, 1969, Ser. No. 826,526
Int. Cl. E04b *1/70*; E04f *17/04*
U.S. Cl. 52—303 **2 Claims**

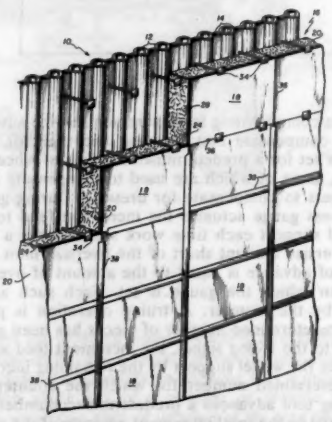


A glazing construction for positioning and sealing, from inside the building, a window pane within a rigid frame. A resilient gasket has, in cross section, the shape of a lower case letter "h" including an outer strip, an intermediate web and a lower flange. The gasket is installed on a rigid frame larger than the glass pane so that the outer border defined by the outer strip is smaller than the glass pane, and the intermediate border defined by the intermediate web is slightly larger than the glass pane. The glass pane is installed from inside the building by movement normal to the plane of the window and directly into the intermediate border. A rigid sill member is then secured around the opening inside the building to provide a sill border smaller than the glass pane. Finally, a plurality of resilient wedge pieces are positioned between the sill border and glass pane to secure the glass pane in place.

3,590,540
PREFABRICATED LAMINATED INSULATED WALL PANELS

Richard C. Johnson, Dansville, N.Y., and John M. Connell, Mountain Lake, N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Continuation of application Ser. No. 716,126, Mar. 26, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 468,819, July 1, 1965, now Patent No. 3,375,628. This application Sept. 4, 1968, Ser. No. 757,301
Int. Cl. E04c *2/22*; E04b *1/80*
U.S. Cl. 52—309 **10 Claims**



Prefabricated insulated wall panels formed from overlying layers of heat resistant materials. The panels are capable of

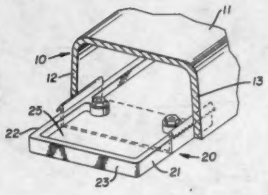
being assembled in abutting relation on the outer surface of a metallic enclosure. The panels have an inner fibrous insulation layer of materials such as asbestos, glass fiber, mineral wool, aluminum silicate fibers or felt secured together with inorganic binders such as bentonite, portland cement or high temperature calcium aluminate cements or an organic binder such as phenolic or latex. The insulation layer has a compressive strength sufficient to afford a suitable working surface. A heat-resistant thermosetting layer formed from an organic adhesive with a base of neoprene, rubber, silicone, or resin adhesive is applied to the insulation layer and bonds a reinforced resin laminate layer formed from polyester, phenolic, or epoxy resin, with glass fiber or fibrous asbestos. The panel joints have bonding strips of several types and configurations securing the resin laminate layer.

3,590,541

SILL TRIM ASSEMBLY

George Epstein, Akron, and Robert E. Mollman, Moreland Hills, both of, Ohio, assignors to Alside, Inc., Akron, Ohio

Filed May 19, 1969, Ser. No. 825,721
Int. Cl. E04c *2/40;* **E04f** *19/02*
U.S. Cl. 52—311 **6 Claims**



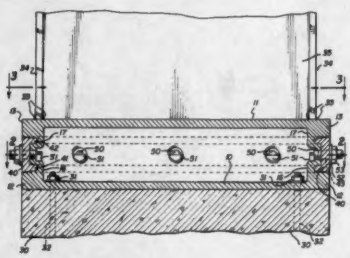
A plastic trim assembly adapted to be placed on window sills, for example. The device is essentially of three-piece construction including a base which can be secured to the existing sill, clips which fit about the base and are secured thereto and have gripping means for engaging a cover or cap unit which is snapped into place thereon and has a decorative outer surface simulating stone, for example. Both the cover and the base have a series of spaced, transversely extending reinforcements enabling the assembly to be cut to size.

3,590,542

CONNECTION SYSTEM FOR CONCRETE AND STEEL STRUCTURES

Harry M. Gallay, Orlando, Fla., assignor to Prestressed Concrete of Colorado, Inc., Denver, Colo.

Filed Jan. 21, 1970, Ser. No. 4,571
Int. Cl. E04b *1/41*
U.S. Cl. 52—295 **9 Claims**



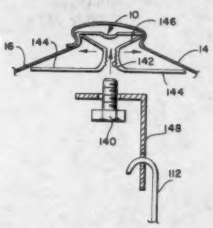
A connection system for concrete and steel structures comprising a pair of frame plates which face each other when fastened to the structures to be connected, each frame plate having a thickened marginal portion provided with an outwardly opening peripheral longitudinally extending recess, a longitudinal groove communicating with the recess, and spaced apart notches on the face of the marginal portion abutting the other frame plate; tongue strips formed to fit in the recesses of abutting frame plates and provided with tongues which enter the grooves of the frame plate, said strips having holes registering with the notches of a pair of abutting frame plates; and a fastener extending through registering notches in the frame plates and a hole in the tongue strip to connect the pair of frame plates together and thereby connect the structural members to which the frame plates are fastened. The same system can be achieved by providing tongues in the marginal portion of the frame plates, and grooves in the strips attaching the pair of frame plates.

3,590,543

CLIP ASSEMBLIES FOR USE WITH CANOPIES AND WALL PANELING CONSTRUCTIONS

William C. Heirich, 2912 Wauhilah Drive, Muskogee, Okla.

Continuation-in-part of application Ser. No. 597,509, Nov. 29, 1966, now abandoned. This application Feb. 1, 1968, Ser. No. 702,240
Int. Cl. E04d *3/362*
U.S. Cl. 52—478 **8 Claims**



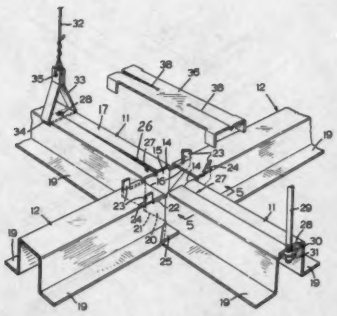
Clip assemblies of varying configuration enabling decorative and functional fixtures to be attached to the interlocking flanges of adjacent panel elements characterized by varying techniques for permitting the clip assemblies to press outwardly against the locking flanges thus securing the clip assemblies within the locking flanges while resisting any tendency to slide or otherwise become unfastened.

3,590,544

SUPPORT STRUCTURE

Charles G. Shepherd, Oakville, Ontario, Canada, assignor to Wilson Lighting Limited, Toronto, Ontario, Canada

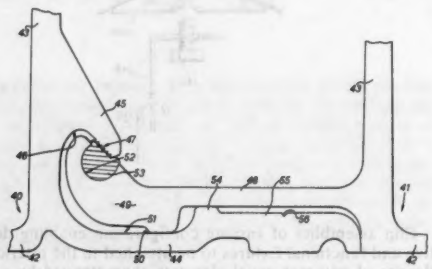
Filed Nov. 6, 1969, Ser. No. 874,138
Int. Cl. E04b *1/68, 5/52*
U.S. Cl. 52—573 **12 Claims**



A grid support structure comprising a pair of collinear first support beams of thermally expandible material, and a pair

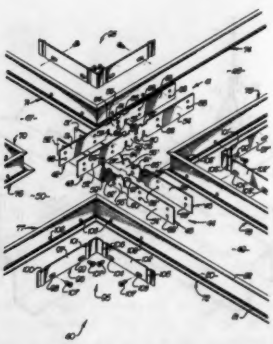
of collinear second support beams of thermally expandible material which are perpendicular to the first support beams and the adjacent ends of which are secured to the adjacent ends of the first support beams. Longitudinal slits are formed in the first beams, each slit extending from the end of the appropriate beam to a position between the ends thereof with the portions of the beam bounding the slit disposed in different planes. Corresponding slits are formed in the second beams or, alternatively, outwardly directed lugs, by means of which the second beams are secured to the first beams are presented by each first beam and are secured to the second beams at positions spaced from the first beam. Longitudinal thermal expansion of the second beams causes the portions of each first beam bounding the slit therein to be urged into overlapping relationship, longitudinal thermal expansion of the first beams similarly causing the portions of each second beam bounding the slit therein to be urged into overlapping relationship, or causing the lugs to flex relative to the first and second beams, as the case may be.

3,590,545
STRUCTURAL ASSEMBLIES
Cyril J. Webb, Birmingham, England, assignor to Alcoa of Great Britain Limited, Droitwich, England
Filed Oct. 24, 1968, Ser. No. 770,240
Claims priority, application Great Britain, Oct. 27, 1967, 49054/67
Int. Cl. E04c *1/30*
U.S. Cl. 52—588 **2 Claims**



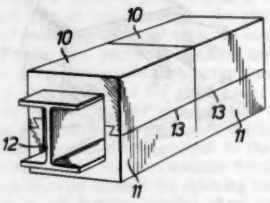
Metal floor assembly comprising at least two units interengaging along side edge portions which overlap and have between their overlapped portions a removable sealing strip.

3,590,546
SUSPENDED CEILING SUPPORT AND AIR DISTRIBUTION OUTLET ASSEMBLY
Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Covina, Calif.
Filed Apr. 21, 1969, Ser. No. 817,954
Int. Cl. F04b *5/52;* **F24f** *7/04, 13/08*
U.S. Cl. 52—475 **10 Claims**



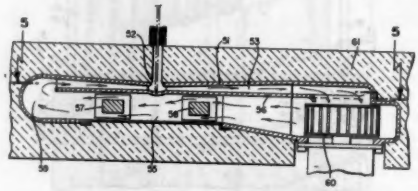
A suspended ceiling support assembly providing longitudinally extending air distribution outlets in a ceiling plane, the outlets intersecting in either the midportion of the ceiling, the intersection of the ceiling with a wall, or the intersection of the ceiling with two intersecting walls, each of the outlets comprising inverted T-shaped longitudinally extending ceiling elements in spaced parallel relation each including provision for connection to hangers, the hangers comprising an arrangement or grid of spaced-apart members which may be interfitted in various combinations to provide a grid of cruciform, T, or right-angle shape and on which the inverted T-shaped ceiling elements are mounted providing various air distribution outlet intersection configurations each having an open center or intersection area.

3,590,547
CASINGS FOR JOISTS, COLUMNS AND OTHER STRUCTURAL MEMBERS
George Molyneux, and George Walter Molyneux, both of Eastbrook Road, Gloucester, England
Filed Oct. 21, 1968, Ser. No. 769,234
Claims priority, application Great Britain, Oct. 25, 1967, Nov. 30, 1967, Feb. 9, 1968, 48433/67;54439/67;6468/68
Int. Cl. E04c *3/293, 3/34*
U.S. Cl. 52—728 **5 Claims**



A fireproof casing for a steel joist with flanges including a number of precast concrete blocks formed with interengaging undercut surfaces to interlock around the joist and each block capable of being positioned transversely on the joist and of interlocking with the other blocks by longitudinal movement. The interlocking surfaces of the blocks are tapered to provide a wedging effect and in one embodiment the blocks are arranged to support further horizontal joists purely in compression against a flange of the main joist.

3,590,548
ENVELOPE OPENING MECHANISM
Edwin F. Pierce, Cherry Hill, N.J., and Robert J. Russell, Philadelphia, Pa., assignors to Kenco Corporation, Cherry Hill, N.J.
Filed Apr. 16, 1969, Ser. No. 817,619
Int. Cl. B26f *3/02;* **B65h** *35/10*
U.S. Cl. 53—3 **6 Claims**



Apparatus for opening envelopes by weakening three edges thereof by the passage of heated air or gas sequentially across each of the three edges to carbonize and weaken the edges. A parallelogram vacuum pickup is employed which operates in conjunction with a vacuum distribution valve for

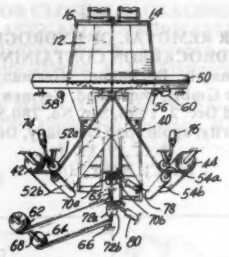
controlling the pickup and delivery of the envelope. Opposed belts convey the envelope sequentially through three burner sections interposed between which are flipover mechanism which rotate the envelope 90° to present the next adjacent edge for carbonizing. At the end of the burner sections, a third flipover rotates the envelope into position in a flip-down mechanism which delivers the envelope to a differential roller with its unopened edge in a trailing position. A differential roller conveyor assembly is provided which includes a conveyor belt and a roller with a brake which is selectively actuated in response to the appearance of the envelope in the opening mechanism to exert a shearing force on the envelope and lay back an edge thereof exposing the contents.

3,590,549

METHOD AND APPARATUS FOR WRAPPING A PALLET LOAD

Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Newark, N.J.

Filed June 7, 1968, Ser. No. 735,366
Int. Cl. B65b *53/02, 61/10*
U.S. Cl. 53—30 **10 Claims**



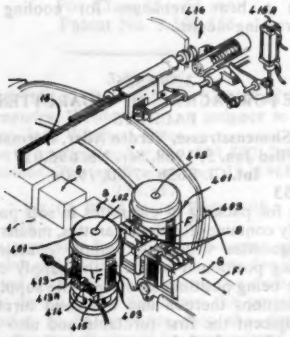
A pallet load of product is secured onto a pallet by forming a sleeve of heat shrinkable film around the pallet load with its open top extending above the pallet load and its open bottom extending below the platform of the pallet. An auxiliary web of relatively high shrink energy film is secured to the sleeve diametrically above the load, and an additional auxiliary web of relatively high shrink energy film is secured to the sleeve diametrically below the platform.

3,590,550

CIGARETTE PACKERS

Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated

Filed May 27, 1969, Ser. No. 828,262
Claims priority, application Italy, June 8, 1968, June 11, 1968, June 11, 1968, 7092 A/68;7097 A/68;7098 A/68
Int. Cl. B65b *57/10*
U.S. Cl. 53—54 **7 Claims**



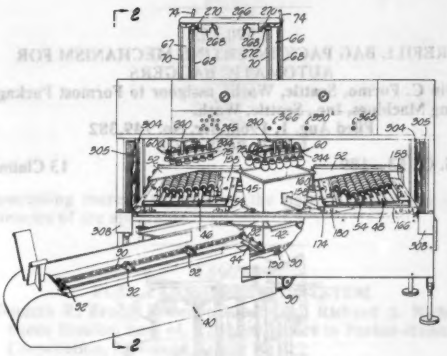
A packing machine having means for successively filling a plurality of containers with rodlike articles and independent means for forming a foil and paper pack and means for transferring the articles from the container into the pack and means for detecting the number and integrity of the articles prior to transfer.

3,590,551

AUTOMATIC APPARATUS FOR PACKING ARTICLES IN BOXES

Fred W. Riddington, Ontario; Paul F. Paddock, Riverside, and Henry J. Lanfrankie, Glendale, all of, Calif., assignors to Sunkist Growers, Inc., Los Angeles, Calif.

Filed Mar. 27, 1969, Ser. No. 811,018
Int. Cl. B65b *57/06, 35/38*
U.S. Cl. 53—60 **36 Claims**



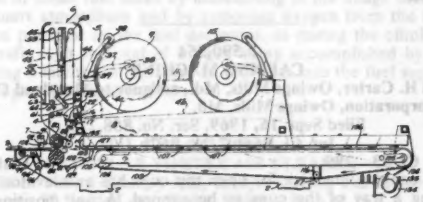
A machine to pack oranges in boxes has a central packing station occupied by a box and has two supply stations on opposite sides of the packing station where the fruit is arranged in staggered rows on channel assemblies that expand for gravitational supply movement of the fruit and contract to form patterns of fruit, the right channel assembly forming one particular pattern and the left channel assembly forming another particular pattern, the two patterns alternating in the layers in a box. A right pickup head and a left pickup head are mounted on an overhead carriage that shifts between a right position and a left position. At the right position the vacuum cups of the right head pick up a new layer from the right channel assembly and the vacuum cups of the left pickup head deposit a layer in the box. At the left position of the carriage the vacuum cups of the left head pickup a pattern at the left channel assembly and the vacuum cups of the right head deposit a layer of fruit in the box.

3,590,552

AUTOMATIC PANEL WRAPPING MACHINE

Carl R. Marschke, Phillips, Wis., assignor to Marquip Inc., Phillips, Wis.

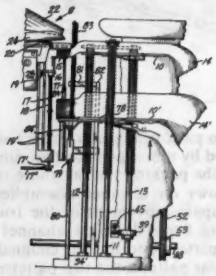
Filed June 4, 1969, Ser. No. 830,466
Int. Cl. B65b *57/02, 11/12, 41/12*
U.S. Cl. 53—66 **15 Claims**



A wrapping machine in which paper is fed from a paper roll and wrapped around a plurality of separate intermittently fed panel boards. Means responsive to the diameter of paper remaining on the paper roll applies a gradually decreasing drag force to prevent overrunning by the paper roll. Paper passes over a capstan roll which is driven in response to the

position of a vertically movable dancer roll which is cradled by and tensions the paper. The dancer roll position also engages and releases the braking device. An idler roll is provided with a downwardly inclined paper stop, the end of which is spring biased upwardly to confine paper against the idler roll and prevent backward sliding of paper when it is severed therebeneath. The paper passes through a shock-absorbing device and hence to a pair of nip rolls through which a narrower panel board having glue strips adjacent its lower edges is fed. The paper and board are then fed between lower driven belts and upper converging belts which pull the paper taut; and the paper is folded and tucked under the board edges for contact with the glue strips. Means responsive to passage of a board therethrough severs the paper between boards, and the paper end portion is pulled back through the nip.

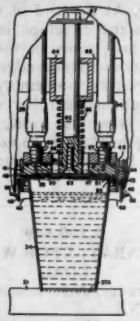
3,590,553
REFILL BAG PACK INSERTING MECHANISM FOR AUTOMATIC BAGGERS
Alvin C. Formo, Seattle, Wash., assignor to Formost Packaging Machines, Inc., Seattle, Wash.
Filed Aug. 1, 1968, Ser. No. 749,382
Int. Cl. B65b *43/26*
U.S. Cl. 53—189 **13 Claims**



A plate carrying a pack of bags adjacent to the loading station of an automatic bagger is engaged with and raised by rotation of upright screws as bags are used from the pack. A second plate underlying the first plate and also engaged with and raisable by the screws supports a refill bag pack closely underlying the first plate so that the first plate an be withdrawn enabling the first bag pack to be engaged and supported by the refill bag pack. Spindles extending through apertures in the upper bag pack maintain the bags in registry and transfer spindles enable apertures of a refill bag pack to be threaded on the same spindles as are engaged by the apertures of the upper bag pack. The screws are rotated intermittently to raise the bag packs by a cam-driven overrunning clutch.

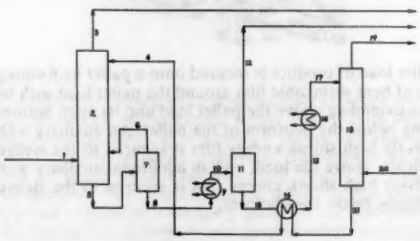
3,590,554
CAPPING MACHINE
Paul H. Carter, Owings Mills, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed Sept. 16, 1969, Ser. No. 858,273
Int. Cl. B65b *7/28*; **B67b** *3/04*
U.S. Cl. 53—299 **16 Claims**

A capping machine for open top cups has an elevator for lifting a tray of the cups to be capped. A unit positioned above the elevator is subdivided into vertical pockets one for receiving each cup in the tray. The pockets are delineated by walls having knife edges at the bottom. Heating irons are disposed in the pockets for contacting a heat sealable sheet of material against the rims of the cups. Further upward movement of the tray causes a retraction of the heating irons and the sheet to contact the knife edges which separate it into individual sections that are heat sealed to the cups respectively. This retraction also causes a wiper ring to fold



down the edges of the individual sections around the rims of the cups as a sanitary measure.

3,590,555
METHOD FOR REMOVAL OF HYDROGEN SULFIDE FROM HYDROCARBON CONTAINING GASES
Rudolf Wackernagel, Dortmund, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany
Filed Dec. 2, 1968, Ser. No. 780,538
Claims priority, application Germany, Dec. 9, 1967, P 16 69 337.1
Int. Cl. B01d *53/00*
U.S. Cl. 55—51 **4 Claims**

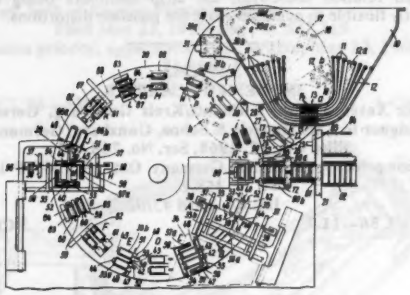


A method for removal of hydrogen sulfide from hydrocarbon containing gases by means of pressure washing with subsequent regeneration of the charged washing means which consists of ester of phosphonic acid or the derivatives of this ester. The charged washing means is intermediarily released from pressure and the intermediary expansion gas is conveyed back to the absorber after compression. The desorption heat expended in the regeneration is partially or entirely removed from the washing means and cooling thereof is utilized through a heat exchanger for cooling the fully regenerated washing means.

3,590,556
A MACHINE FOR PACKING OF CIGARETTES IN SOFT PACKETS
Heinz Focke, Siemensstrasse, Verden Aller, Germany
Filed Jan. 5, 1968, Ser. No. 696,017
Int. Cl. B65b *57/00*, *19/04*
U.S. Cl. 53—53 **20 Claims**

A machine for packing of cigarettes in soft packets comprises a supply container for the cigarettes, means for feeding groups of cigarettes within the supply container, a first turntable being positioned adjacent the supply container, a first turntable being positioned adjacent the supply container and having stations thereon and a second turntable being positioned adjacent the first turntable and also having stations thereon. Several of the stations on the first turntable have means for the preparation of at least two blocks of cigarettes at an individual station. The second turntable cooperates with the first turntable to receive the two block

arrangements of cigarettes. Further several of the second turntable stations perform the operations of making, filling



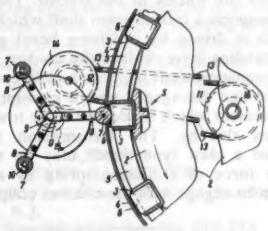
and closing two packet arrangements of the two block arrangements of cigarettes at an individual station.

3,590,557

APPARATUS FOR CLOSING PACKAGING CONTAINERS WITH ELASTICALLY DEFORMABLE WALLS

Adolf Vogel, Matstadt Wurth, Germany, assignor to Fr. Hesser Maschinenfabrick A. G., Stuttgart-Bad Cannstatt, Germany

Filed Mar. 4, 1969, Ser. No. 812,526
Claims priority, application Germany, Mar. 7, 1968, P 16 11 862.0
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 **4 Claims**



Apparatus and method for automatically closing heat-sealable, liquid-filled, flexible-walled containers by means of a cover which is heat sealed to the container. Prior to sealing, container wall portions are depressed by push rolls to decrease the cubic volume of the container during the automatic heat-sealing step.

ERRATUM

For Class 55—51 see:
Patent No. 3,590,555

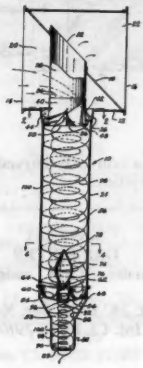
3,590,558

PARTICLE-FROM-FLUID SEPARATOR

John H. Fernandes, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of application Ser. No. 514,582, Dec. 17, 1965, now abandoned. This application Nov. 15, 1968, Ser. No. 778,917
Int. Cl. B01d *45/12;* **B04c** *5/06*
U.S. Cl. 55—338 **8 Claims**

A cyclone separator having flow diverging apparatus adjacent the inlet end of the discharge tube for skimming off the outer layer of fluid flowing along the core vortex flow path and for diverting this fluid into the peripheral vortex flow path prior to its entrance into the discharge tube whereby the diverted fluid will be recirculated through the separator. By means of this diversion of fluid away from the discharge tube inlet, particulate fines contained in the core vortex flow path are prevented from exiting the separator chamber with the processed gas. These fines are instead recirculated through the separation chamber for further



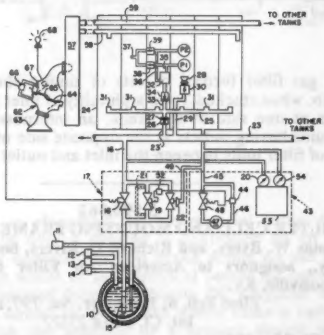
processing thereby to increase the particle separation efficiencies of the apparatus.

3,590,559

FUEL TANK INERTING SYSTEM

Kenneth R. Bragg, Redondo Beach, and Richard A. Nichols, Santa Monica, both of, Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 6, 1968, Ser. No. 711,020
Int. Cl. B01d *19/00*
U.S. Cl. 55—160 **30 Claims**



An inerting system to prevent fire and explosion within aircraft or other fuel tanks by maintaining in the ullage thereof an inert atmosphere and by removing oxygen from the fuel when pressure on the fuel decreases, as during the climb of aircraft, such removal of oxygen being accomplished by injecting a mixture of fuel and an inert gas into the fuel supply through submerged nozzles.

3,590,560

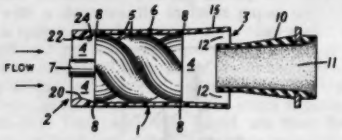
TUBULAR VORTEX AIR CLEANER

David B. Pall, 5 Hickory Hill, Roslyn Estates, and Robert I. Gross, 50 Sadde Lane, Roslyn Heights, both of, N.Y.

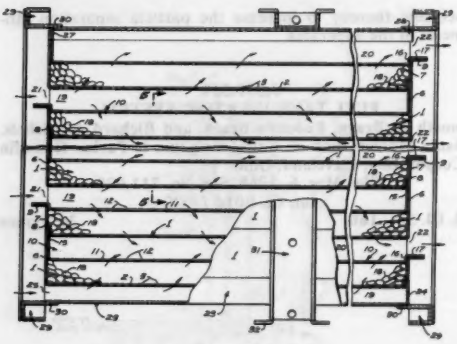
Continuation of application Ser. No. 682,847, Nov. 14, 1967, now abandoned , Continuation-in-part of application Ser. No. 646,903, June 19, 1967, now abandoned. This application July 28, 1969, Ser. No. 849,571
Int. Cl. B01d *45/12*
U.S. Cl. 55—457 **13 Claims**

A tubular vortex air cleaner is provided by this invention.

The central passage of the air cleaner has a constriction adjacent the inlet and a convexly curved surface leading from the inlet to the constriction.

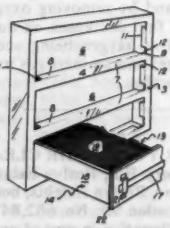


3,590,561
GAS FILTER
Robert I. Marble, Gardena, Calif., assignor to Farr Company, El Segundo, Calif.
Filed Oct. 28, 1968, Ser. No. 771,117
Int. Cl. B01d *29/08*
U.S. Cl. 55—484 **2 Claims**



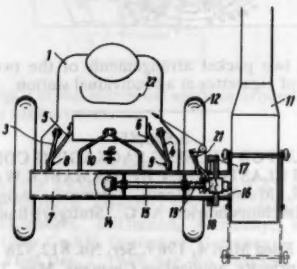
A gas filter formed of sets of similar sheet metal trays which, when stacked, form a plurality of inlet plenums having inlets at one side of the stack, an interposed set of outlet plenums having outlets at the opposite side of the stack, and sets of filter units between the inlet and outlet plenums.

3,590,562
FILTER CELL AND MOUNTING FRAME ASSEMBLY
Thomas W. Byers, and Richard D. Rivers, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.
Filed Feb. 6, 1969, Ser. No. 797,146
Int. Cl. B01d *25/22*
U.S. Cl. 55—484 **3 Claims**



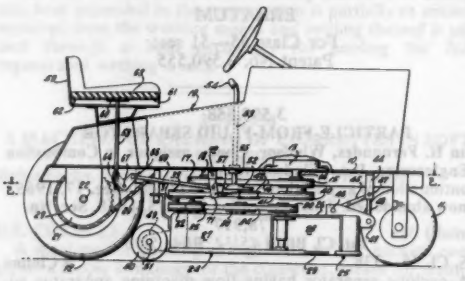
A filter cell and mounting frame assembly including a modular support frame having a plurality of flow-through side-by-side spaced passages separated by strip members, certain portions of which separator strip members are comparatively more flexible than other portions, the support frame passages receiving filter cells, the peripheral end walls of which cells engage with the separator strip members in fast sealed relation therewith, the strip members being sufficiently flexible to accommodate for possible distortions.

3,590,563
IMPLEMENT CARRIER
Franz Xaver Lenzer, Kleinkotz/Kreis Gunzburg, Germany, assignor to Karl Mengele & Sohne, Gunzburg, Germany
Filed Oct. 17, 1968, Ser. No. 768,441
Claims priority, application Germany, Oct. 18, 1967, P 15 82 358.2
Int. Cl. A01d *45/02*
U.S. Cl. 56—11.7 **3 Claims**



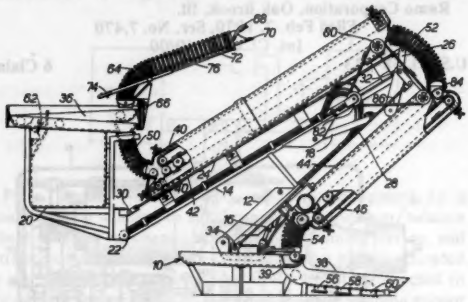
An implement carrier includes a bracket member in a form of a tube which is adapted to be supported on a three point suspension to the rear of a tractor and to extend in a cantilever fashion to one side thereof so as to project outwardly from one of the wheels of the tractor. The tubular bracket member supports a transmission shaft which includes a bevel gear which is driven by a driving bevel gear from a rearwardly extending drive shaft of the tractor. The opposite end of the transmission shaft includes a claw coupling which may be engaged and disengaged with a counter coupling carried by an implement which is adapted to be towed by the tractor and driven thereby. The transmission shaft includes a coupling of a claw type which may be moved outwardly under the force of a biasing spring by a remote control mechanism to engage with the counter coupling of the implement.

3,590,564
SAFETY DEVICE FOR MOWERS
Herbert B. Clifford, Michigan City, Ind., assignor to Poloron Products of Indiana, Inc., Michigan City, Ind.
Filed Dec. 4, 1968, Ser. No. 790,188
Int. Cl. A01d *35/26*
U.S. Cl. 56—25.4 R **7 Claims**



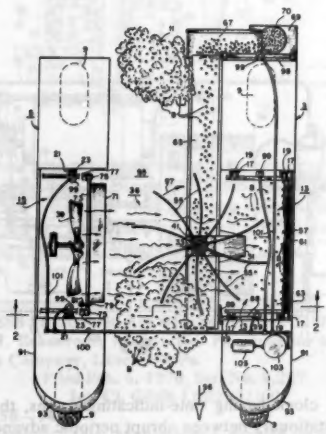
A safety device for mowers and particularly riding mowers which requires manual actuation of a mechanism to enable engagement of clutching means between the rotary cutting blades and the engine or other power source and wherein release of the manually operated means will automatically effect disengagement of the clutch.

3,590,565
FRUIT PICKING APPARATUS
Austin Iball, Portland House, Brunswick Road, and Charles Malcolm Iball, 2 Selsden Close, South Down Park, Mole Road, both of Buckley, Flintshire, Wales
Filed May 23, 1969, Ser. No. 827,319
Claims priority, application Great Britain, May 23, 1968, 24,568/68
Int. Cl. A01g 19/04
U.S. Cl. 56—328 5 Claims



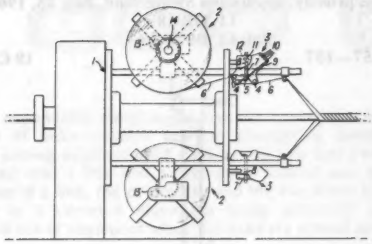
This invention provides apparatus for fruit picking in which a bucket for supporting a fruit picker is carried at the upper end of an extending arm or boom mounted on a base which may comprise or itself be mounted on a vehicle for driving or towing between rows of trees in an orchard. A conveyor is provided along the length of the extending arm for conveying picked fruit from the bucket to the base. Fruit sorting means is provided adjacent or in the base to which fruit is supplied from the lower end of the conveyor. Additionally, fruit picking apparatus is mounted at or adjacent the bucket for operation by the operator standing in the bucket to sever and collect fruit. Controls are mounted in the bucket to operate the raising and lowering mechanism for the arm and the controls may be duplicated for operation from the base or thereabouts.

3,590,566
BERRY HARVESTER
Ernest M. Cutts, Sr., and Ernest M. Cutts, Jr., both of R.D. #3, Vincetown, N.J.
Filed Nov. 24, 1969, Ser. No. 879,233
Int. Cl. A01g 19/00
U.S. Cl. 56—330 10 Claims



A machine for harvesting berries from bushes arranged in a row has a wheel supported frame structure with side portions spaced transversely of each other a distance sufficient to enable the side portions to straddle the row. One side portion carries a bush engageable shaker assembly that includes rotatable and laterally oscillatable fingers for engaging successive bushes as the harvester moves along a row of bushes. Behind this assembly is a backboard from which an inclined chute leads down to a conveyor. The rotating and oscillating shaker assembly shakes berries loose from their branches. Opposite the shaker assembly on the second side portion is a blower which blows against the bushes and blows loosened berries over to the backboard from which they fall down onto the chute which then guides them to the conveyor that carries them toward a collecting station.

3,590,567
APPARATUS FOR CONTROLLING THE TENSION IN FLEXIBLE MATERIAL BEING HELICALLY WRAPPED ABOUT AN ELONGATED CORE
Zbigniew Bonikowski, London; Peter Harvey, London, and Bruce Henry Keen, Hounslow, all of, England, assignors to British Insulated Callender's Cables Limited, London, England
Filed Apr. 15, 1969, Ser. No. 816,275
Claims priority, application Great Britain, Apr. 16, 1969, 17823/68
Int. Cl. B65h 81/08
U.S. Cl. 57—3 9 Claims

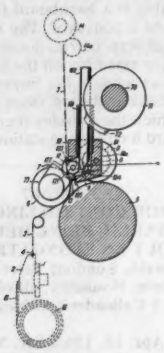


The tension in elongated flexible material being drawn from a drum or over a capstan is controlled by an electromagnetically operated friction brake acting on the drum or capstan. The whole of the electrical power for operating the brake is obtained from a high-gain DC amplifier which has in its input circuit an impedance whose value is varied in accordance with the position of a sensing device which moves in accordance with changes in tension against a substantially constant biasing force. The system is stabilized to prevent hunting.

3,590,568
APPARATUS FOR APPLYING A PROCESSING SUBSTANCE TO A TRANSPORTED YARN
Josef Kubovy, Usti nad Orlici, Czechoslovakia, assignor to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed Nov. 17, 1969, Ser. No. 877,168
Claims priority, application Czechoslovakia, Nov. 15, 1968, PV-7775-68
Int. Cl. D01h 1/12; B05c 1/06
U.S. Cl. 57—35 10 Claims

A processing substance is applied to a yarn withdrawn from a rotary suction spinning chamber in upright direction by a pair of transporting rollers. An upright tubular container for a stick of the substance is located adjacent the applicator roller, and is heated by a heater to melt so that the substance

flows onto the applicator roller. One of the transporting rollers, the applicator roller, and the container are mounted on

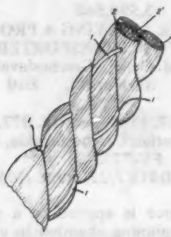


a movable support which can be raised to a servicing position.

3,590,569
TELESCOPING GUIDE ARRANGEMENT FOR INDIVIDUALLY LOWERING RING HOLDERS
Peter Martin Pfyffer, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed July 23, 1969, Ser. No. 851,133
Claims priority, application Switzerland, July 25, 1968, 11,378/68
Int. Cl. D01h *7/64*
U.S. Cl. 57—137 **19 Claims**

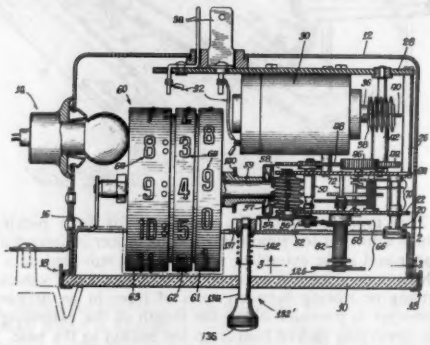
Telescoping guide arrangement for individually lowering ring holders.

3,590,570
SEWING THREAD
Tomomi Okuhashi, Tokyo, and Kinichi Kumura, Amagasaki-shi, both of, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Jan. 2, 1969, Ser. No. 788,570
Claims priority, application Japan, Mar. 14, 1968, Mar. 14, 1968, June 18, 1968, 43/20417;43/20418;43/51397
Int. Cl. D02g *3/02, 3/04, 3/12*
U.S. Cl. 57—140 **3 Claims**



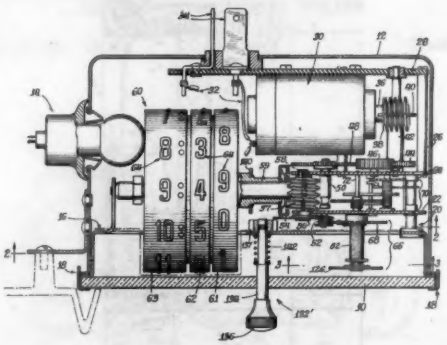
A sewing thread which comprises an organic textile fiber and an electrically conductive filament, the amount of said electrically conductive filament being sufficient to impart to said sewing thread an electrical resistance of less than about 2,000 megohms per centimeter, and said electrically conductive filament having the functional properties of textile fibers and comprising a substrate of chemical fiber and an electrically conductive coating thereon.

3,590,571
DIGITAL CLOCK SECONDS INDICATOR
Emil J. Niznik, Lake Geneva, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Feb. 2, 1970, Ser. No. 7,470
Int. Cl. G04c *19/00*
U.S. Cl. 58—23 **6 Claims**



A digital clock having a plurality of drums showing the hours and the minutes, a motor for driving the drums periodically in digital advancements, a coil spring acting as a power-transmitting means for periodically controlling the motor and thereby the movement of the drums, but constantly operating and in doing so moving a seconds indicator.

3,590,572
DIGITAL CLOCK
Emil J. Niznik, Lake Geneva, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Feb. 2, 1970, Ser. No. 7,471
Int. Cl. G04c *3/00*
U.S. Cl. 58—24 **12 Claims**



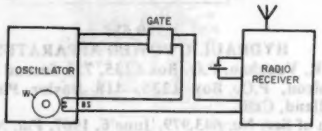
A digital clock having time-indicating drums, the drums remaining stationary between abrupt periodic advancements, the advancements being produced by an electric motor; it includes a coil spring energized by the motor and running constantly; it also includes a mechanical structural contact arrangement triggered by the constant movement of the spring and starting the motor for another cycle.

3,590,573

SYSTEM FOR SYNCHRONISING TIMING DEVICES

Jacques Dietsch, Paris, France, assignor to Societe Anonyme des Etablissements Leon Hatot, Paris, France

Filed Feb. 17, 1969, Ser. No. 799,648
Claims priority, application France, Feb. 19, 1968, 140350
Int. Cl. G04c 3/04
U.S. Cl. 58—24 15 Claims



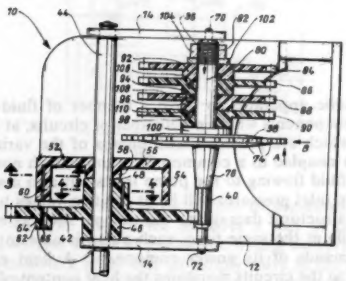
Pulse signals from a radio receiver are applied to a synchronizing winding to synchronize the pendulum, balance wheel or other mechanical oscillator of a timing device, and a transistor-switching device controlled by a pickup operated by the said mechanical oscillator is electrically connected to prevent the energization of the synchronizing winding except when the mechanical oscillator is within a predetermined limited range of positions, so as to eliminate parasitic noise signals received during the remaining time.

3,590,574

DRIVING DEVICE ON METRONOMES

Rudolf Wittner, Jahnstr. 6, Isny Allgau, Germany

Filed Oct. 7, 1969, Ser. No. 864,382
Claims priority, application Germany, Oct. 12, 1968, Nov. 23, 1968, G 68 01 998;P 18 10 596.9
Int. Cl. G04f 11/02; G04b 1/14, 1/18
U.S. Cl. 58—130 19 Claims



A metronome may have most of the elements of the driving means formed of integrally molded plastic parts, such as the balance wheel and shaft, and the bell wheels may have teeth which are reinforced by semicylindrical working faces and are provided with interlocking hubs.

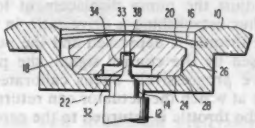
3,590,575

OILLESS SHOCKPROOF BEARING FOR TIMEPIECES

James H. Eckenrode, Millersville, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

Filed Feb. 6, 1970, Ser. No. 9,287
Int. Cl. G04b 13/02, 31/00
U.S. Cl. 58—140 8 Claims

The device of this invention is a molded bearing of self-lubricating material utilized in construction of a shockproof block for timepieces. The bearing in a preferred embodiment may be substituted for the conventional hole jewel, endstone, and setting in a shockproof balance block to form a durable oilless bearing for the balance staff. The bearing surrounds the end of the balance staff and incorporates an internal rounded surface to provide a point contact side bearing and a flat internal surface adjacent the end of the staff to control



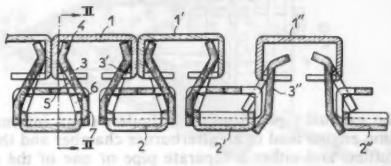
endshake between bearings. The upper external surface of the bearing is rounded and adapted to abut a conventional spring normally utilized to bias an endstone. A die utilized to fabricate the bearing is also described.

3,590,576

EXPANDING METAL BRACELET

Guy Jacques Rubinelli, Annecy, France, assignor to Fabrique Laminor, Annecy, Haute-Savoie, France

Filed Feb. 20, 1969, Ser. No. 801,040
Claims priority, application France, Feb. 29, 1968, 141829
Int. Cl. F16g 13/24
U.S. Cl. 59—79 3 Claims



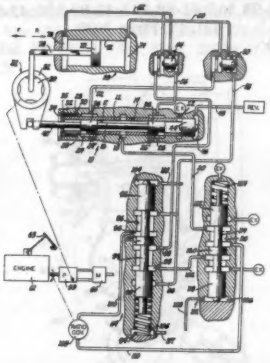
An expandable metal metal bracelet having two staggered layers of links includes resilient connecting members, or bails, joining adjacent links each having two limbs which are inserted into a link and a protrusion locked into the body portion of a link, the protrusion and the two limbs lying normally in a common plane but being relatively angularly twisted out of alignment when the links are spread apart.

3,590,577

TRANSMISSION CREEP SPEED CONTROL VALVE

Robert C. Utter, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1969, Ser. No. 875,424
Int. Cl. F02b 41/00
U.S. Cl. 60—19 6 Claims



A hydraulic system for controlling the amount of creep in a hydrostatic or hydromechanical transmission including the

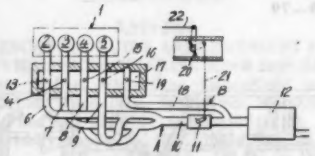
directional valve is herein described. The directional valve is mechanically connected to the servocontrol of the transmission pump such that in low, forward or reverse drive range, at zero throttle setting, a control signal is passed through the directional valve to the actuator of the servocontrol to cause the servo to adjust the pump displacement to a predetermined value, thus establishing a drive ratio in the transmission. When the throttle is depressed and the pump displacement is increased by the control signal, the porting of the directional valve progressively opens calibrated restrictions to limit the rate at which the actuator can return to the creep position when the throttle is returned to the zero or idle position.

3,590,578

AFTERBURNER APPARATUS FOR ENGINE EXHAUST GAS

Shizuo Yagi; Akira Ishizuya, and Junji Otani, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 857,661
Claims priority, application Japan, Sept. 14, 1968, Dec. 26, 1968, 43/66352;43/949923
Int. Cl. F01n *3/10*
U.S. Cl. 60—29 **8 Claims**



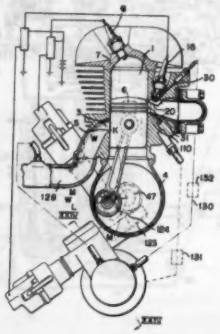
The exhaust pipes from the cylinders of an internal combustion engine lead to an afterburner chamber and thence to a muffler, and either a separate pipe or one of the exhaust pipes constitutes a bypass conduit leading from the afterburner chamber to the muffler. A control valve device regulates the flow through the exhaust pipes, with the exception of the bypass conduit, whereby the exhaust gases from the cylinders can flow directly therefrom to the muffler or can be diverted through the afterburner chamber and bypass conduit to the muffler. The valve device is closed when the engine is at low-power output and open when the engine is at high-power output.

3,590,579

EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINES

Satoru Takahashi, Hammamatsu-shi, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kaminura, Hamana-Gun, Japan

Filed June 12, 1968, Ser. No. 736,391
Claims priority, application Japan, June 26, 1967, Nov. 24, 1967, Dec. 15, 1967, Dec. 26, 1967, Dec. 29, 1967, 42-38,529;42-98,365;42-80,533;42-83,850;42-85,048
Int. Cl. F01n *3/00*
U.S. Cl. 60—30 **2 Claims**



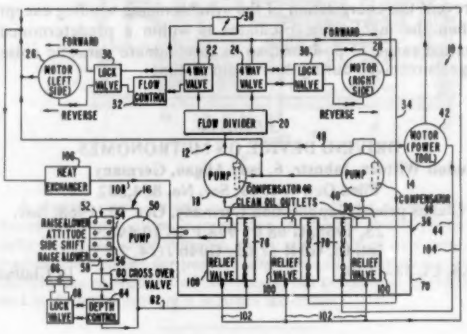
A spark plug is caused to spark at a point in the exhaust passageway immediately downstream from the exhaust port of each cylinder of an engine immediately after full closure of the exhaust port during the compression stroke in order to cause combustion of some fuel-air gas unavoidably blown past the exhaust port into the exhaust passageway as charge-loss gas before full closure of the port. A small quantity of supplementary fuel-air gas can be supplied as pilot gas with or without supplemental air to the spark gap to facilitate and ensure positive ignition and combustion. Other refinements include a precombustion chamber around the spark gas and control devices for causing the pilot gas to be supplied only when this supply of pilot gas is advantageous.

3,590,580

HYDRAULIC POWER APPARATUS

Donald R. Vaughan, P.O. Box 1235, 731 Second St., and Carl J. Falcon, P.O. Box 1235, 418 Baylor Place, both of Woodland, Calif.

Division of Ser. No. 643,979, June 6, 1967, Pat. No. 3,507,125.
Filed Mar. 13, 1970, Ser. No. 24,403
Int. Cl. F15b *21/04*
U.S. Cl. 60—52 **7 Claims**



Hydraulic apparatus to drive a number of fluid-actuated power components wherein a number of circuits, at least certain of which are provided with pumps of the variable flow type, are coupled to a common filter unit which not only filters the fluid flowing to the pump inlets but also assures that the pump inlet pressures will be at positive values to thereby prevent structural damage to the pumps, such as by cavitation, while at the same time, each pump is able to meet the fluid demands of its power component. A heat exchanger coupled to the circuits maintains the heat content of the fluid in the circuits within a safe temperature range. The apparatus is especially adapted for use with a vehicle having drive means, a power tool shiftably mounted on the vehicle, and power structure for shifting the power tool into any one of a number of operative positions.

3,590,581

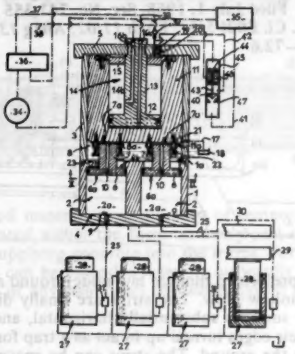
DEVICE FOR CONTROLLING THE FEEDING OF HYDRAULIC POWER DEVICES

Vittorio Louis Achille Bianchi, 37 avenue Paul Doumer, Paris 16 (Seine), France

Filed Apr. 22, 1969, Ser. No. 818,230
Claims priority, application France, May 10, 1968, 151477
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5 **7 Claims**

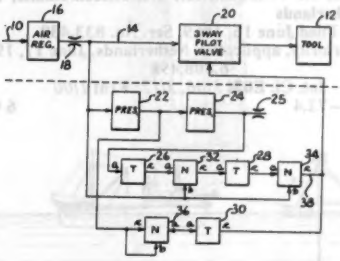
Device for controlling the feeding of a plurality of hydraulic power devices comprising a plurality of cavities, each communicating, at one of its ends, with one of the said power devices and in each of which slides a piston for feeding one power device, the said feed pistons being connected to a common driving member which displaces the same simultaneously in translation in one direction and the other, so

that the said pistons discharge the hydraulic fluid from the cavities into the associated power devices and suck the said



fluid from the power devices into the cavities according to their direction of displacement.

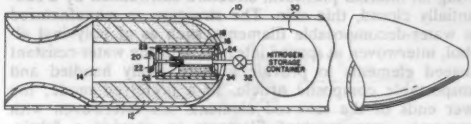
3,590,582
WORK CONTROL SYSTEM
Dale F. German, and R. Stanford Short, both of Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio
Filed Oct. 9, 1968, Ser. No. 766,202
Int. Cl. B23q *5/06;* **F15b** *21/10*
U.S. Cl. 60—57 **20 Claims**



A device for controlling work output of pneumatic tools such as a wrench. The device includes a pair of pressure sensing valves and a pair of pneumatic timing devices which operate to control a three-way air supply valve in the air line to the tool. After the sensing valves sense the proper pressure sequence in the air line indicating application of a load to the tool, the three-way valve remains open for a preselected increment of time controlled by the first timer. Thus, the tool is driven for this preselected increment of time. The three-way valve is then closed, and the second timer insures that the three-way valve remains closed and the tool remains without power for a second preselected increment of time. The device automatically resets so that the sequence of operation may be repeated.

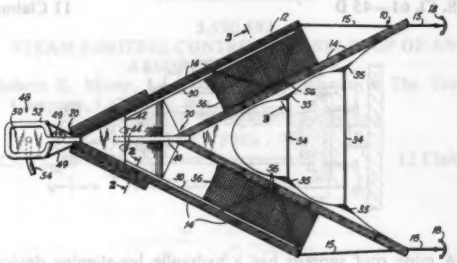
3,590,583
ENHANCEMENT OF BURNING RATE PROCESS OF SOLID PROPELLANT COMPOSITIONS USING RADIATION
David C. Sayles, Huntsville, Ala., assignor to the United States of America as Represented by the Secretary of the Army.
Filed July 20, 1967, Ser. No. 655,735
Int. Cl. C06d *5/06;* **F23r** *1/18*
U.S. Cl. 60—219 **1 Claim**

The irradiation and use of a catalytic agent which undergoes rapid and controlled decomposition after said irradiation, said catalytic agent being used in a solid propellant



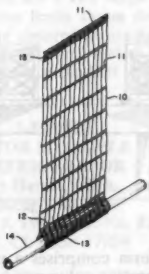
composition, and said irradiation preferably taking place upon ignition of the solid propellant composition.

3,590,584
FLOATING OIL CONFINING APPARATUS
Hugh J. Fitzgerald, Austin, and Ernest H. Koepf, Dallas, both of, Tex., assignors to Ocean Pollution Control, Inc., Dallas, Tex.
Filed Dec. 5, 1969, Ser. No. 882,638
Int. Cl. B01d *21/02;* **E02b** *15/04*
U.S. Cl. 61—1 **10 Claims**



Apparatus for collecting oil from the surface of a body of water having two V-shaped assemblies of flexible inflated floats, one arranged 5 to 25 feet leewardly of the other on the same central axis, whereby the wind and current drive the oil into the open end of the assemblies and cause it to be funneled rearwardly to their apices. Each V-shaped assembly is provided with a depending skirt of impermeable sheet material, the lower edges of the skirts at either side of the inner assembly being interconnected by shock cords and the lower edges of the skirts on the outer assembly being connected to the inner assembly by netting.

3,590,585
COMPOSITE STRUCTURE
Jan G. De Winter, Enschede, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 22, 1969, Ser. No. 818,369
Claims priority, application Great Britain, Apr. 24, 1968, Apr. 24, 1968, 19375/68;19376/68
Int. Cl. E02b *3/04, 8/04;* **D02g** *1/18*
U.S. Cl. 61—3 **7 Claims**



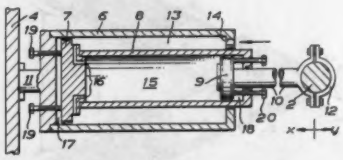
An improved form of "artificial seaweed" for combating coastal erosion and the like comprises an anchored array of

seaweed elements which are buoyant, water-resistant filamentary strands, preferably of foamed, stretched polyolefin having an internal plexiform structure surrounded by a substantially closed, thin skin. The structure as manufactured has water-decomposable filaments, such as of polyvinyl alcohol, interwoven at spaced intervals with the water-resistant seaweed elements to provide a more easily handled and transportable composite article. In a preferred mode, the lower ends of the seaweed elements are interwoven with transverse, water-resistant filaments to provide a fabric, preferably in tubular form, which is readily attached to an anchoring element or converted into an anchoring element by being filled with cement or sand.

3,590,586
MINE ROOF SUPPORTS

Walter Lubojatsky, and Bernhard Von Pelser-Berensberg, both of Recklinghausen, Germany, assignors to Gullick Limited, Wigan, Lancashire, England

Filed Apr. 28, 1969, Ser. No. 819,782
Claims priority, application Luxembourg, Sept. 5, 1968, 56825
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **11 Claims**

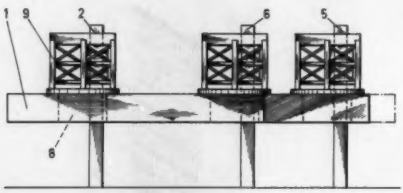


A mine roof support has a hydraulic leg-aligning device which on pressurization assumes an extension intermediate full and zero extension and which is positively connected so as to push and pull the leg as required. The device may be double-acting piston and cylinder with means for injecting pressure fluid to make up the quantity of fluid in each end of the cylinder to a respective predetermined amount. Alternatively the device may comprise a hydraulically extensible member and a hydraulically contractable member so that on pressurization the first fully extends and the second fully contracts. The two are connected in series mechanically.

3,590,587
FLOATING PLATFORM WITH HORIZONTALLY MOVABLE COLUMNS

August Hendrik Maria Smulders, Wassenaar, Netherlands, assignor to N. V. Industrieele Handelscombinatie, Rotterdam, Netherlands

Filed June 16, 1969, Ser. No. 833,499
Claims priority, application Netherlands, June 17, 1968, 68.08497
Int. Cl. E02b *17/00*; E02f *9/04*; B65b *21/50*
U.S. Cl. 61—46.5 **2 Claims**

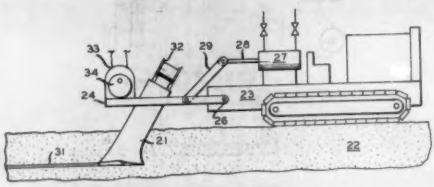


A floating platform comprises a pontoon and more than three vertical supporting columns which are individually vertically movable relative to the pontoon and are also individually horizontally movable relative to the pontoon so that the pontoon may be moved horizontally over small distances without the need for refloating it.

3,590,588
PROCESS AND APPARATUS FOR LAYING A HORIZONTAL SUBTERRANEAN FILM

Homer L. Draper, and Duane W. Gagle, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 1, 1968, Ser. No. 741,355
Int. Cl. E02f *5/02*; E02b *11/02*; A01g *13/02*
U.S. Cl. 61—72.6 **8 Claims**

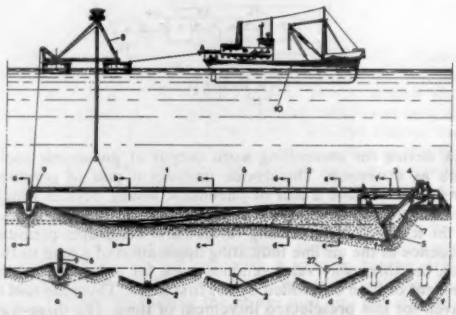


Strips of preformed film are laid underground after passage through a hollow plow. The strips are finally disposed with their major surfaces substantially horizontal, and preferably laid with their edges turned up to act as a trap for water sinking through the ground. The strips can be spaced apart, adjacent or overlapping, and are preferably made of plastic, but may be made of metal foil or of fabric coated previously or coated in place with asphalt. Apparatus to feed the film from a roll through the plow are disclosed, along with tractors to draw the plow, vibrators to vibrate the plow, hydraulic and other means to control the plow depth and position, and means to inject liquid, such as water, asphalt, fertilizer, nematocides or weed killers, on the film as it emerges from the plow.

3,590,589
APPARATUS FOR BURYING PIPELINES

August Hendrik Maria Smulders, Wassenaar, Netherlands, assignor to N. V. Industrieele Handelscombinatie, Rotterdam, Netherlands

Filed June 16, 1969, Ser. No. 833,439
Claims priority, application Netherlands, June 17, 1968, 6,808,498
Int. Cl. E02f *5/06, 5/12*; F16l *1/00*
U.S. Cl. 61—72.4 **6 Claims**



Apparatus for burying pipelines combines a suction dredge for sand with an endless digger for clay. When the digger is used, the sand dredge is somewhat raised to remove the clay and also an auxiliary suction dredge is used for cleaning the digger, as well as a device for bevelling the edge of the dug trench so that the pipeline will settle into it.

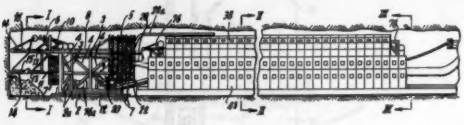
3,590,590
TUNNEL BUILDING

Petar Steva Vujasinovic, Albanska 13, Sarajevo, Uruguay

Continuation of application Ser. No. 692,597, Dec. 21, 1967, now abandoned. This application Mar. 3, 1969, Ser. No. 806,009
Int. Cl. E01g *5/08, 5/16*
U.S. Cl. 61—84 **11 Claims**

A device for excavating a tunnel and lining it with concrete is formed of a scaffolding member located at the working

face and followed in series by a support structure and a concrete form assembly. The scaffolding member has collapsible working platforms which can be arranged vertically across its front end to provide protection during the blasting operation. The support structure includes means for conveying excavated material to a plurality of temporary storage hoppers located within the form assembly and a conveying system for supplying concrete into the forms. Portions of the form panels can be extended laterally outwardly to assist in the removal of any temporary support required for the tunnel.

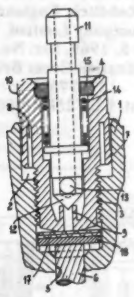


3,590,591

EXPANSION VALVE UNIT FOR A GAS CIGARETTE LIGHTER

Jean Genoud, Saint-Cyr-Au-Mont d'OR, France, assignor to Etablissements Genourd & Cie., Venissieux, Rhone, France

Filed Feb. 18, 1970, Ser. No. 12,165
Claims priority, application France, Mar. 5, 1969, 6906005
Int. Cl. F17c *7/02*
U.S. Cl. 62—50 **9 Claims**



An expansion valve unit of a gas cigarette lighter has a one-piece injection-moulded plastics housing including exteriorly a flexible annular lip bearing sealingly against a smooth annular wall of a hole in the main body of the lighter. The housing includes interiorly another annular lip forming a valve seat cooperating with a valve closure member of the unit. Also included in the housing exteriorly is an external screw thread cooperating with an internal screw thread of the hole, and radially outward projections enabling the unit to be rotated and thus displaced along the hole to regulate a throttle at the inner end of the unit to control the rate of fuel supply to the seat.

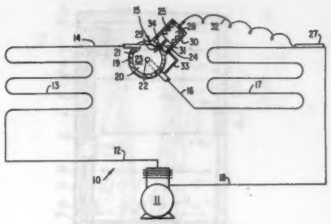
3,590,592

REFRIGERANT SYSTEM EXPANSION MEANS

Charles N. High, Syracuse, N.Y., assignor to Carrier Corporation,, Syracuse, N.Y.

Filed June 23, 1969, Ser. No. 835,474
Int. Cl. F25b *41/04*
U.S. Cl. 62—115 **7 Claims**

A refrigerant expansion or metering device employed in refrigeration systems including compression means, a first heat exchanger and a second heat exchanger, comprising a fluid regulator forming a vortex chamber, through which refrigerant is passed. Disposed within the vortex chamber is movable means operable to vary the path of flow and to vary the rate of flow of refrigerant through the vortex chamber. Control means vary the position of the movable means in response to changes in temperature in the refrigeration system.

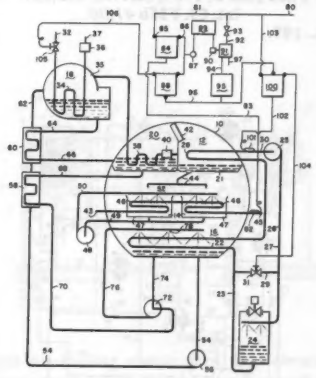


3,590,593

STEAM LIMITING CONTROL FOR STARTUP OF AN ABSORPTION MACHINE

Robert G. Miner, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Dec. 20, 1968, Ser. No. 785,512
Int. Cl. F25b *15/00*
U.S. Cl. 62—148 **12 Claims**



A novel control system for a two stage generator absorption refrigeration machine limits steam demand by the first stage generator when the absorption machine is started after a period of inactivity. The control system is equally applicable to other energy sources for the first stage generator.

3,590,594

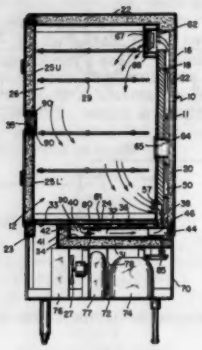
SINGLE EVAPORATOR MULTIPLE TEMPERATURE REFRIGERATOR

Raymond Arend, Grand Haven, Mich., assignor to The Golconda Corporation, Chicago, Ill.

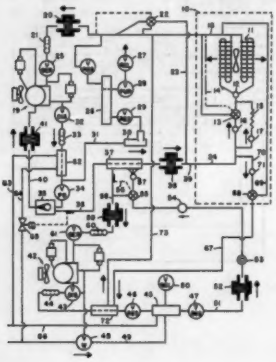
Filed May 13, 1969, Ser. No. 824,060
Int. Cl. F25d *17/04*
U.S. Cl. 62—187 **15 Claims**

A one compartment refrigerator convertible by a removable insulated shelf into two chambers with a narrow cross-sectionally elongated open passageway past the shelf providing restricted airflow between the chambers whereby either chamber can be a freezing chamber while the other one can

be an above-freezing refrigerating chamber, in both of which there is rapid temperature pulldown and the different temperatures are maintained with a high degree of accuracy with minimum sweating and frosting in the chambers.



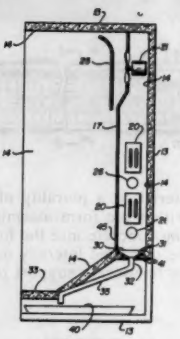
3,590,595
CASCADE REFRIGERATION SYSTEM WITH REFRIGERANT BYPASS
Mark W. Briggs, Holland, Mich., assignor to Thermotron Corporation, Holland, Mich.
Filed June 3, 1969, Ser. No. 830,027
Int. Cl. F25b *41/00*
U.S. Cl. 62—197 **3 Claims**



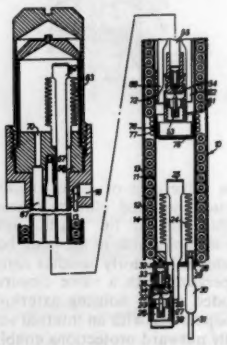
A cascade refrigeration system for installation where the machinery of the system is remote from the cooled space, in which an insulated bypass conduit withdraws at least some of the refrigerant available at the cooled space under a low-load condition, and delivers this refrigerant to a condenser in one of the stages, thus maintaining the circulation of refrigerant.

3,590,596
SIDE-BY-SIDE REFRIGERATOR-FREEZER CONSTRUCTION
Roy V. Johnson, Galesburg, Ill., assignor to Admiral Corporation, Chicago, Ill.
Filed June 6, 1969, Ser. No. 831,024
Int. Cl. F25d *21/06*
U.S. Cl. 62—275 **7 Claims**

A combination side-by-side refrigerator-freezer having a unitary freezer liner with a condensate trough integrally formed in a lower horizontal portion thereof. Internal conduit means connect the bottom of the trough to a condensate disposal area. A radiant type defrost heater is situated below the evaporator and above the trough.

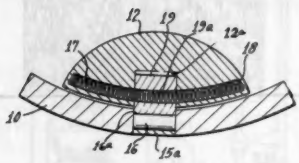


3,590,597
COOLING APPARATUS EMPLOYING THE JOULE-THOMSON EFFECT
David Neil Campbell, Redditch, England, assignor to The Hymatic Engineering Company Limited, Redditch, England
Filed Aug. 6, 1969, Ser. No. 847,917
Claims priority, application Great Britain, Aug. 6, 1968, 37477/68
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **6 Claims**



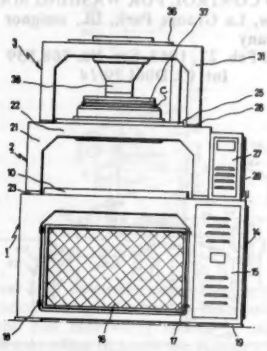
The second stage in a miniature cryogenic two-stage cooler, working on the Joule-Thomson principle, is supplied with gaseous refrigerant which passes from a supply under pressure through one path of a tubular heat exchanger, to an expansion nozzle, after which the expanded gas returns through the other path of the heat exchanger to cool the incoming second stage gas. In the first stage, a precooling refrigerant in liquid form is supplied to a metering nozzle which, having no heat exchanger, is accommodated within the heat exchanger of the second stage, and this refrigerant evaporates to precool the second stage refrigerant. The nozzle of each stage is automatically controlled to vary the flow of refrigerant in accordance with the demand for cooling.

3,590,598
FINGER RING WITH PIVOTALLY MOUNTED SIZE-ADJUSTING MEMBER
Frank Leone, 24 Rim Lane, Hicksville, N.Y.
Filed Aug. 30, 1968, Ser. No. 756,484
Int. Cl. A44c 9/02
U.S. Cl. 63—15.6 5 Claims



A finger ring size adjuster which can be actuated to reduce the internal ring size after the ring is on the finger so that a maximum ring opening can be provided for placing the ring on the finger. A spring-biased detent holds the dimension-reducing element releasably in its full closed position and permits it to be swung under predetermined pressure to its full open position.

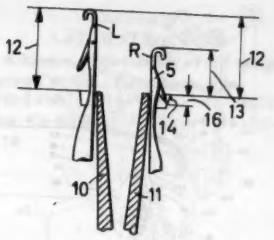
3,590,599
CIRCULAR KNITTING MACHINE
Emilio Llovet Ricart, Mataro, Spain, assignor to Telares Circulares, S. A., Barcelona, Spain
Filed Feb. 5, 1970, Ser. No. 8,879
Claims priority, application Spain, Feb. 6, 1969, 363,632
Int. Cl. D04b 9/06
U.S. Cl. 66—8 4 Claims



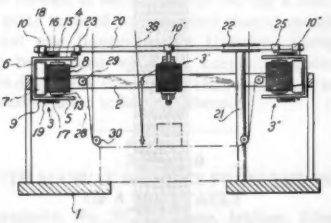
The component parts of the knitting machine are distributed among a plurality of stacked subframes, each subframe comprising a support platform with a large circular opening and legs extending downwardly from each corner of the platform. A support ring is mounted in the circular opening of each platform and successive platforms are reduced in size from the bottom to the top, whereby the machine frame presents a stepped arrangement, in which part of the space enclosed by the lower subframes is taken up by cabinets housing diverse control and ancillary means of the machine.

3,590,600
METHOD OF KNITTING A DOUBLE FABRIC ON A WARP KNITTING MACHINE
Karl Kohl, Chlorodontstrasse 10, Obertshausen, Germany
Filed Mar. 24, 1969, Ser. No. 809,909
Claims priority, application Germany, Mar. 23, 1968, P 17 60 026.9
Int. Cl. D04b 23/02
U.S. Cl. 66—87 5 Claims

A double fabric is knitted on a Raschel knitting machine having two needle beds and a needle bar motion which lifts one of the needle bars in alternating courses only high enough so that the free end of the open latches are still received in the grooves of the trick plate while the remainders of the latches project upward from the trick plate, the other needle bar knitting in the usual manner, and the two layers being connected by needles of one bar knitting in the other row of needles.



3,590,601
APPARATUS FOR FEEDING ELASTIC YARN TO A CIRCULAR KNITTING MACHINE
Akiji Sugiura, Osaka-hu, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka-shi, Japan
Filed June 25, 1968, Ser. No. 750,672
Claims priority, application Japan, June 27, 1967, Aug. 4, 1967, 42-54900;42-49802
Int. Cl. D04b 15/50
U.S. Cl. 66—132 1 Claim

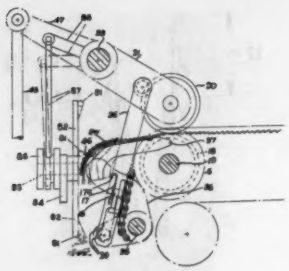


Apparatus for feeding elastic yarn to a circular knitting machine comprising a yarn-feeding unit mounted on a circular arm placed coaxially with the center line of the circular knitting machine, said feeding unit including of a yarn package and a roller contacting the package and being rotated by a circular belt through a driving pulley rotating in concert with the rotation of the circular knitting machine, to unwind the yarn package as it rotates in the same direction as the rotation of the roller.

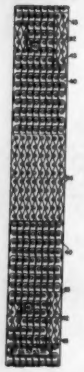
3,590,602
STRAIGHT BAR KNITTING MACHINES
Raymond Blood, and Alan John Pearson, both of Loughborough, Leicestershire, England, assignors to Cotton William Limiged
Filed Sept. 3, 1968, Ser. No. 756,833
Claims priority, application Great Britain, Sept. 5, 1967, 40530
Int. Cl. D04b 15/90
U.S. Cl. 66—149 8 Claims

A straight bar knitting machine has drawoff mechanism including endless chains having fabric- or welt-stick-engaging drawoff hooks for carrying a pressed-off fabric blank from the needles to normally open drawoff rollers and over an angular stripper plate, and wherein the stripper plate and the

fabric thereon are gripped by the drawoff rollers which are rotated to advance the gripper plate and the fabric for stripping the fabric or the welt stick clear of the drawoff hooks.



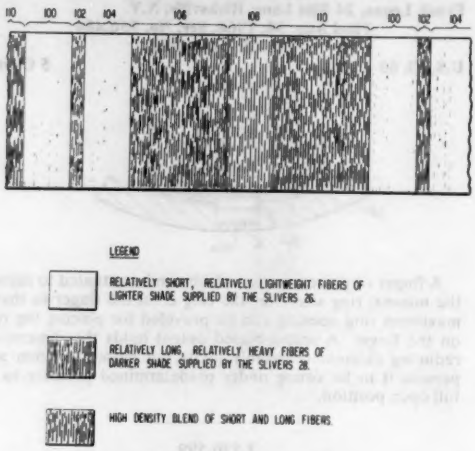
3,590,603
SHEER WARP KNIT GARMENT AND METHOD FOR MAKING SAME
George E. Jackson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,987
Int. Cl. D04b 9/02
U.S. Cl. 66—177 **5 Claims**



Continuous, back-to-back tubular undergarments, having sheer, lockstitched body portions and spaced, reinforced toe, heel, welt, or panty portions, are produced on a double-needle-bar Raschel knitting machine having at least 12 guide bars. The basic body knit is chainstitched wales of one strand, the wales being connected by zigzag stitches of another strand. The chainstitches are converted to a jersey 2–0, 2–4 stitch in the reinforced area so that no guide bar must move more than one needle space to form the garment.

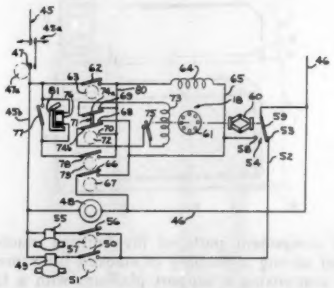
3,590,604
KNITTED PILE FABRIC
Abraham John Beucus, Delavan, Wis., and Patrick Joseph Forde, Kitchener, Ontario, Canada, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Division of Ser. No. 525,554, Feb. 7, 1966, Pat. No. 3,413,823.
Filed Aug. 30, 1968, Ser. No. 810,401
Int. Cl. D04b 9/14
U.S. Cl. 66—191 **3 Claims**

A circular knit, deep pile fabric simulating in appearance and texture a natural furpiece formed by seaming together animal pelts. The pile is made up of long, dark-colored fibers and short, light-colored fibers. Wale-to-wale differences in total numbers of pile fibers and in the relative proportions of



two types of fibers provide color shading and texture effects simulating not only the pelts of animals but also the seaming characteristics associated with garments formed from pelts.

3,590,605
SIGNAL AND CONTROL FOR WASHING MACHINES
Frank Dean Low, La Grange Park, Ill., assignor to General Electric Company
Filed Feb. 27, 1968, Ser. No. 708,539
Int. Cl. D06f 39/14
U.S. Cl. 68—12 **4 Claims**

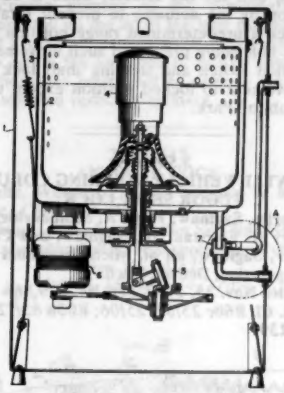


An alarm which sounds and causes the extraction operation to cease if the washing machine lid is open during centrifugal extraction. The alarm includes an operating coil connected in series with the drive motor during extraction operations and having sufficient resistance to prevent operation of the motor. A switch is connected in parallel with the coil and is responsive to the position of the washer lid, to be closed when the lid is closed and open when the lid is open. Thus the coil is energized to operate the alarm and prevent operation of the motor only when the lid is open during extraction.

3,590,606
WASHING MACHINE
Kojiro Takeyama, Amagasaki-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 19, 1968, Ser. No. 753,573
Claims priority, application Japan, Aug. 19, 1967, 42/72094
Int. Cl. D06f 39/08, 39/10
U.S. Cl. 68—208 **1 Claim**

A washing machine wherein a trap is provided in a drain

passage leading from the drain port of the washing tub to a drain pump to separate objectionable materials present in the



washing water being drained therefrom, thereby to provide for smooth drainage of said washing water.

3,590,607
GUARDED LOCK ASSEMBLY

Commodore E. Beaver, 225 Linden, Council Bluffs, Iowa

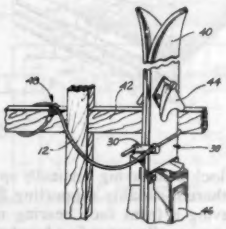
Filed Nov. 29, 1968, Ser. No. 780,943
Int. Cl. E05b *67/38*
U.S. Cl. 70—56 **2 Claims**

A guarded lock assembly comprising a swinging hasp, a staple extended through the hasp, a lock body, a locking bolt covering one end removably locked in said lock body, a locking bolt extending through the staple, a hollow guard attached to the other end of said locking bolt and protecting the locking both and staple.

3,590,608
LOCKING DEVICE

Charles C. Smyth, and Henry J. Smyth, 1515 E. Crest Drive, both of Altadena,, Calif.

Filed June 9, 1969, Ser. No. 831,660
Int. Cl. E05b *73/00;* **A63c** *11/00*
U.S. Cl. 70—58 **2 Claims**

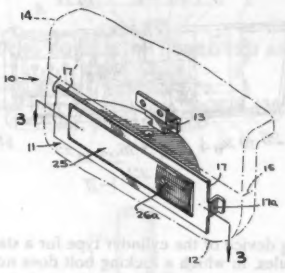


A locking device adapted to prevent the theft of an object by tethering the object to a fixture. The device comprises an elongated, flexible cable with a fixed loop at one end and means for providing a flexible variable-sized, releasable binding at the other end.

3,590,609
LATCH STRUCTURE

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed Feb. 11, 1969, Ser. No. 798,325
Int. Cl. E05b *65/52;* **E05c** *3/04, 3/14*
U.S. Cl. 70—70 **11 Claims**

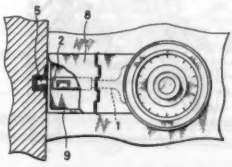


A latch including lock means for luggage cases and the like including a keeper to be mounted on an upper case section, and a latch unit to be mounted on the lower case section. The latch section includes a housing defining a concave well and a latch member supported therefrom for circumferential movement between latch and unlatching positions. The latch member is formed of sheet material, having a bolt plate and retaining plate secured to a channel-shaped member by inwardly bent end flanges and a U-shaped spring housed therein to be stressed when the keeper advances through either of two opposite sides of the channel-shaped member to eject the keeper upon unlatching thereof.

3,590,610
LOCK WITH MANUAL RELEASE FROM THE INTERIOR OF A SAFE VAULT

Shinji Hayakawa, No. 38, 4-Chome, Ichinoe, Edogawa-Ku, Tokyo, Japan

Filed May 16, 1969, Ser. No. 825,143
Int. Cl. E05b *63/00;* **E05c** *15/02*
U.S. Cl. 70—92 **6 Claims**

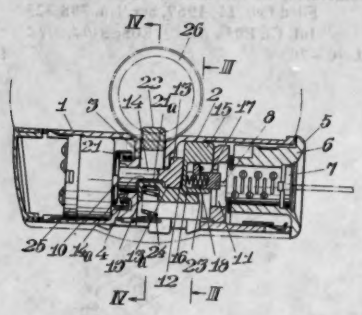


A lock with means for manually releasing its bolt from the interior of a safe vault which comprises a lock mechanism, a base bolt connected to and controlled by the lock mechanism, a hollow joining member provided with a guide recess and secured to the base bolt, a bolt extension with one end slidably supported in said hollow joining member, and the distal end engageable with a keeper, and a stemmed knob secured to the supported end of the bolt extension, said stemmed knob being slidable along the guide recess and being accessible for manual actuation.

3,590,611
LOCKING DEVICE

Yoshikatu Nakashima, Nagoya-shi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed Feb. 25, 1969, Ser. No. 801,944
Int. Cl. B60r 25/02
U.S. Cl. 70—186 1 Claim

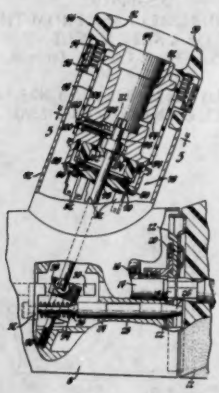


A locking device of the cylinder type for a steering column in automobiles, in which a locking bolt does not protrude to a position where it engages the steering column even when a rotatable cylinder of the lock is turned to a locking position by a key. Even in the locking position the key inserted into the rotatable cylinder and protruded partly therefrom keeps its engagement with an engaging means mounted on a sliding member which in turn suppresses the movement of an extension integrally made with the locking bolt.

3,590,612
VEHICLE CONTROLS AND COINCIDENTAL LOCK THEREFOR

David H. Henning, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1969, Ser. No. 879,747
Int. Cl. B60r 25/02, 25/06; E05b 65/12
U.S. Cl. 70—239 4 Claims

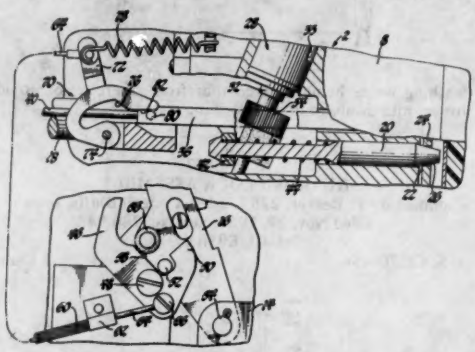


A concentric transmission selector knob and ignition cylinder lock actuator structure is mounted upon the upper portion of the vehicle steering column mast jacket with the selector knob including rotary electrical switch structure thereon adapted for connection in circuit with a remote apparatus operative to select the various power transmission ranges upon rotation of the knob to its various positions. The rotatable cylinder lock actuator nested within the knob is connected with a rotary ignition switch and further connected by rack and sector drive means to a shiftable lock bolt mounted on the mast jacket for movement between locked and unlocked positions relative to the vehicle steering shaft. A further lock bolt for the selector knob is cammed to a locking position by the actuator to prevent rotation of the knob from such a predetermined range position as "Park," the knob lock bolt being prevented such movement and the actuator, ignition switch and steering shaft lock bolt being prevented movement to locked position except upon selection of the knob to "Park."

3,590,613
COINCIDENTAL VEHICLE STEERING COLUMN AND FLOOR SHIFT LOCK

Dan R. Kimberlin, Saginaw; Floyd A. Schluckebier, Frankenmuth; Henry N. Fjerstad, Jr., Saginaw, and Frederick C. Riffelmacher, Saginaw, all of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1969, Ser. No. 879,866
Int. Cl. B60r 25/02, 25/06; E05b 65/12
U.S. Cl. 70—239 4 Claims

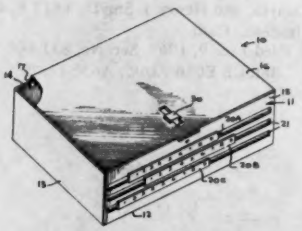


Coincidental locking apparatus for an automotive vehicle steering column and a floor mounted transmission gear shift selector includes a manually operable steering column lock device operative to prevent rotation of the vehicle steering shaft, a device within the floor shift operative to latch the selector member thereof in a predetermined condition of the transmission such as "Park," and a flexible cable interconnection between the two locking devices operative to prevent locking of the steering shaft until "Park" is selected in the floor shift and further operative to hold or lock said floor shift latched in such selected condition upon manual locking of the steering column lock device.

3,590,614
KEYLESS LOCK BOX

Norman T. Kunst, 24 Stonecrest Road, Ridgefield, Conn.

Filed Feb. 12, 1970, Ser. No. 10,716
Int. Cl. E05b 37/16, 65/52, 15/14
U.S. Cl. 70—298 10 Claims



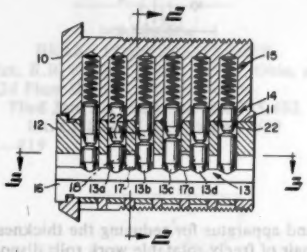
A combination lock box having vertically spaced slideways in the front wall thereof slidably supporting three elongated slide members having a front face bearing numbers and a horizontal row of rearwardly extending breakable right angular tumbler elements integral with the body and aligned be-

hind the numbers, designed for the purchaser to break off one of the tumbler elements of each slide member aligned behind a chosen number of the combination. A latch member supported on the lid of the lock box has three vertically spaced keeper projections which coact with the tumbler elements to retain the lock box in locked condition except when the slides are positioned to dispose the combination numbers in selected vertical alignment.

3,590,615
ANTIPICK LOCK

Jerald Schultz, Woodmere, N.Y., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 716,824, Mar. 28, 1968, now abandoned. This application Feb. 16, 1970, Ser. No. 11,427
Int. Cl. E05b *15/14, 27/06*
U.S. Cl. 70—421 **8 Claims**

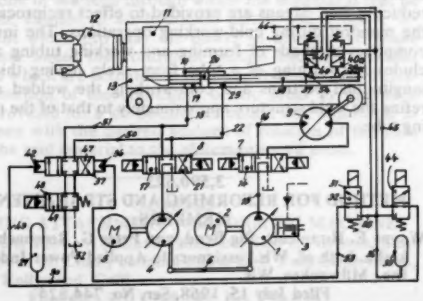


The key plug of a lock pin tumbler cylinder is equipped with one or more side pins, each of which is in cam relation to one or two tumblers so that the tumblers when moving by their spring pressure to a locking position will cause the side pins to project beyond a side of the key plug. Moreover, each side pin is in cam relation to the cylinder body so as to be pressed toward a tumbler when the key plug tends to rotate. The side pins do not contribute a part of the lock combination, but will move a limited amount only into a side bore in the cylinder whereby to dog the key plug against rotating movement. Picking torque that may be applied to the key plug then will be transferred through the side pins to the cylinder. Also, a tumbler or coacting side pin alternately will move into a portion of the keyway during an attempt to pick the tumblers.

3,590,616
MEANS FOR CONTROLLING THE MOVEMENTS OF A MANIPULATOR

Ludwig Schussler, Willich, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 21, 1968, Ser. No. 754,281
Claims priority, application Germany, Aug. 25, 1967, Sch 41209
Int. Cl. B21d *37/08, 43/02*
U.S. Cl. 72—21 **5 Claims**

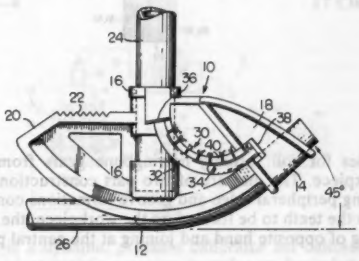


Means for controlling the movements of a forging manipulator, comprising: a a tongs-holder or peel assembly and tongs so mounted on a manipulator carriage as to be axially movable and rotatable thereon, a hydromotor for driving the carriage, a piston-and-cylinder unit for driving the tongs-holder and tongs relatively to the manipulator carriage, valves controlling the supply of pressure fluid to the hydromotor and to the piston-and-cylinder unit, so arranged that during the forging stage of the working cycle the tongs-holder and tongs are moved relatively to the manipulator carriage at the same speed as the manipulator carriage but in the opposite direction, whereas when the workpiece is free to move, the piston-and-cylinder unit is automatically connected with a source of fluid pressure at a higher pressure and is moved in the same direction as the manipulator carriage but at a higher speed.

3,590,617
PIPE BENDING TOOL WITH IMPROVED ANGULAR INDICATOR

Ralph W. Mount, R.R. #1, Zelienople, Pa.

Filed May 13, 1968, Ser. No. 728,425
Int. Cl. B21c *51/00*
U.S. Cl. 72—34 **1 Claim**

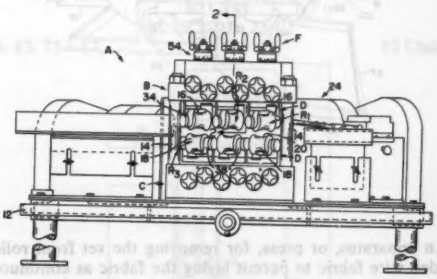


A pipe-bending tool is provided with an elongated, arcuate transparent tube and is provided with angular marks. A ball is positioned in the tube which is closed at its ends. As the tool is operated to bend a pipe, the position of the ball relative to the angular marks indicates the angle of the bend.

3,590,618
CROSS ROLL STRAIGHTENER MACHINE

William Hyams, Bethel Park, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Jan. 28, 1969, Ser. No. 794,524
Int. Cl. B21b *19/02, 31/16*
U.S. Cl. 72—99 **10 Claims**



A cross roll machine comprising a housing, upper and lower roll carrier means supported in said housing, upper and lower rolls supported by said roll carrier means, one of said roll carrier means and said housing defining vertically spaced-apart cooperating surfaces disposed so that a load tends to move said surfaces together, further including a plurality of dish springs between said surfaces, and means for preloading said dish springs to maintain a substantially con-

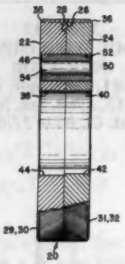
stant spacing between the surfaces under normal load conditions.

3,590,619

MANUFACTURE OF HERRINGBONE GEARS

Walter Sheldon, and Gary Eigenbrode, both of Waynesboro, Pa., assignors to Landis Machine Company, Waynesboro, Pa.

Filed July 19, 1968, Ser. No. 746,025
Int. Cl. B21h *5/02*
U.S. Cl. 72—102 **2 Claims**



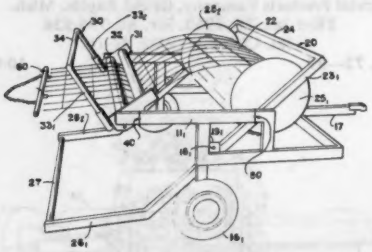
Dies for roll forming herringbone gears from a unitary workpiece. The dies are of two part construction, each part having peripheral ridge and groove formations complementary to the teeth to be formed on the workpiece, the formations being of opposite hand and joining at the central plane of the die.

3,590,620

APPARATUS FOR STRAIGHTENING ROLLED WELDED WIRE FABRIC

John L. Lowery, 955 Magnolia Woods Ave., Baton Rouge, La.

Filed Jan. 24, 1969, Ser. No. 793,868
Int. Cl. B21d *5/14*
U.S. Cl. 72—166 **9 Claims**



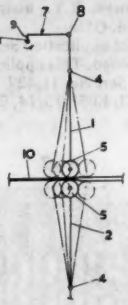
An apparatus, or press, for removing the set from rolled welded wire fabric to permit laying the fabric as continuous flat unbroken strips. The apparatus includes a frame, or carriage, which supports a first yokelike assembly pivotally mounted on the frame for receiving, and preferably for lifting, a roll or welded wire fabric to an elevated position for unreeling. A second yokelike assembly, also pivotally mounted upon the frame, is provided with a pair of rolls through which the end of the wire fabric is passed. Sufficient stress or force is applied by the coupling action of the rolls to unset the distortion or set produced by the rolled condition of the welded wire fabric.

3,590,621

APPARATUS FOR REDUCING THE THICKNESS OF METAL

Karel Saxl, Sutton Coldfield, England, assignor to Imperial Metal Industries Kynoch Limited, Wilton, Birmingham, England

Filed Nov. 8, 1968, Ser. No. 774,416
Claims priority, application Great Britain, Nov. 9, 1967, 51/02/67
Int. Cl. B21b *21/00, 31/20*
U.S. Cl. 72—189 **13 Claims**



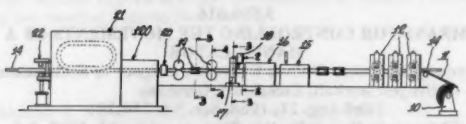
Method and apparatus for reducing the thickness of metal in which a pair of freely rotatable work rolls disposed on opposite sides of the metal are oscillated in synchronism upon a pair of oscillatable arms to subject the metal to rolling action of the arms, and in which auxiliary load-applying means are included to influence the roll displacement force at particular positions of arm oscillation so as to urge the work rolls towards straight line parallel movement.

3,590,622

APPARATUS FOR MAKING TUBING

Frank E. Elge, Ludlow, and Thomas G. Wolfe, Kane, both of, Pa., assignors to Ernest N. Calhoun, Pittsburgh, Pa.

Filed Dec. 18, 1968, Ser. No. 784,754
Int. Cl. B21b *17/10*
U.S. Cl. 72—209 **5 Claims**



A tube mill wherein skelp is formed to tube shape and welded along a longitudinal split. The tubing is cold-worked at several passes in a manner that the coarse grain structure at the weld area is refined without affecting the surfaces of reducing dies. Means are provided to effect reciprocation of the mandrel during cold-working operations. The invention comprises methods of forming and working tubing and includes the forming of a tube from skelp having thickened longitudinal portions and cold-working the welded area to refine the weld structure approximately to that of the remaining tube.

3,590,623

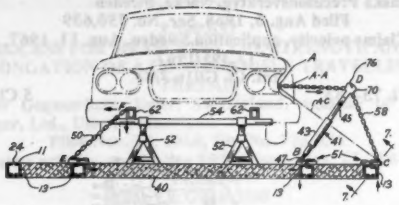
METHOD FOR REFORMING AND STRAIGHTENING MEMBERS

Wayne E. Hunnicutt, Big Bend, and Peter G. Rossbach, Waukesha, both of, Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.

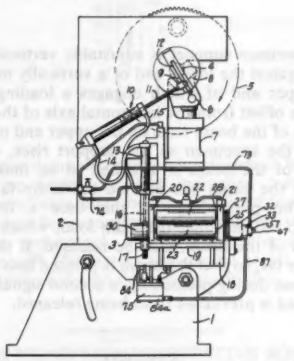
Filed July 15, 1968, Ser. No. 744,824
Int. Cl. B21d *11/02, 9/14*
U.S. Cl. 72—302 **18 Claims**

A method and apparatus are disclosed for reforming and

straightening members such as bent or damaged bodies and frames of vehicles, and portions thereof, wherein a force effective from a platform surface is applied via force-transmitting means to straighten said bodies and frames.



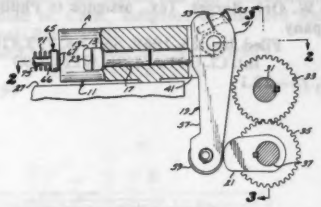
3,590,624
BRAKE FOR PRESSFEEDER
Oscar E. Pax, R.R. #5 Box 400-A, Celina, Ohio, and Francis J. Pax, 624 Plum Drive, Coldwater, Ohio
Filed Jan. 31, 1969, Ser. No. 795,482
Int. Cl. B21d *43/02*; B65h *17/00*
U.S. Cl. 72—419 **5 Claims**



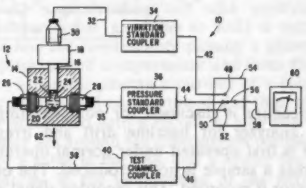
There is disclosed herein brake instrumentalities and means for controlling the same which are associated with roll-feeding mechanism to regulate roll rotation of material fed therebetween, such mechanism being shown in this instance in association with a high-speed punch press, to which the strip material fed through the feeding mechanism is supplied for operation by the punch press, the precise positioning of the material being affected by the brake instrumentalities hereof which are adapted for incremental feeding of such material. The brake mechanism involves the provision of a compact housing in which are located a pressure plate, suitable friction plates, a brake disc which in turn is connected to at least one of the rolls through which the material is fed, all under the control of an hydraulic piston and cylinder arrangement which provides the power to actuate the brake mechanism under the control of certain hydraulic booster elements which are actuated in response to and in timed relation to motion of the crankshaft of the press by hydraulic means provided for such booster actuation and adjustable in accordance with the desired amount of rotation of the rolls to feed the said material to the aforementioned press.

3,590,625
SWAGING ATTACHMENT FOR FORMING MACHINES
Gordon Del Faro, Woodland Hills, and Leo C. Groves, Sunland, both of, Calif., assignors to R & R Four-Slide Corp., North Hollywood, Calif.
Filed Oct. 25, 1968, Ser. No. 770,636
Int. Cl. B21j *9/18*
U.S. Cl. 72—452 **10 Claims**

A swaging attachment for use on an automatic forming machine and including a quiescent swaging die supported on the machine and a cooperating movable swaging die driven by a drive cam. The drive cam is operatively coupled with the forming machine to reciprocate said movable swaging die to swage a workpiece being fed into said machine.

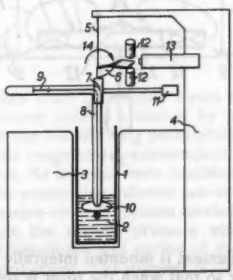


3,590,626
SINUSOIDAL PRESSURE CALIBRATOR
Hans W. Hugli, Williamsville, N.Y., assignor to Kistler Instrument Corporation, Clarence, N.Y.
Filed Mar. 4, 1970, Ser. No. #16,407
Int. Cl. G01l *27/00*
U.S. Cl. 73—4 **17 Claims**



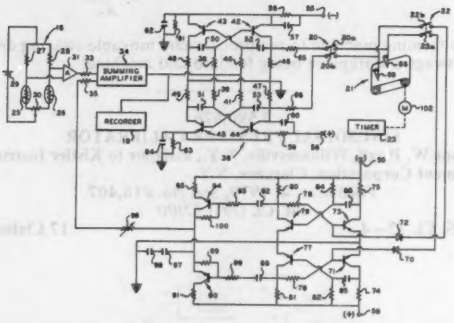
Disclosed is a dynamic pressure calibrator for calibrating particularly piezoelectric pressure transducers for relatively high and rapid sinusoidal pressure variations. The calibrator comprises a housing on which are mounted both a standard and a test transducer. A seismic mass of known weight within the housing is vibrated when the device is placed on a shaker table and acts through a piston and a hydraulic oil reservoir in the housing to simultaneously apply equal pressure forces to the transducers so their outputs can be compared. An accelerometer senses seismic mass acceleration and the transducers are preferably preloaded through the oil.

3,590,627
APPARATUS FOR DETECTING POUR POINT
Kyle Campbell, Bright Walton, Newbury, England, assignor to Esso Research and Engineering Company
Continuation of application Ser. No. 566,679, July 20, 1966, now abandoned. This application Oct. 31, 1969, Ser. No. 871,791
Int. Cl. G01n *25/01*
U.S. Cl. 73—17 **12 Claims**



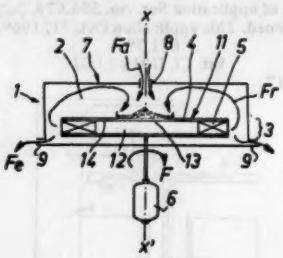
A member immersed in a fluid is suspended from a torsional element. Intermittent torsional pulses are applied to the member to displace the member relative to the fluid. The liquid is cooled and when the intermittent pulses are no longer effective to displace the member relative to the fluid the temperature is noted to indicate the pour point of the liquid.

3,590,628
BASELINE COMPENSATION FOR CHROMATOGRAPHIC ANALYZER
Harold W. Orr, Borger, Tex., assignor to Phillips Petroleum Company
Filed Jan. 23, 1969, Ser. No. 793,420
Int. Cl. G01n *31/08*; G11b *5/00*
U.S. Cl. 73—23.1 1 Claim



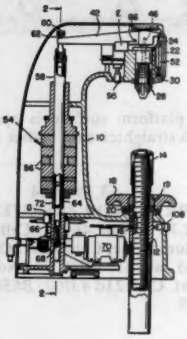
A procedure is disclosed for compensating a chromatographic analyzer for baseline drift and irregularities. The analyzer is first operated under normal operating conditions except that a sample is not introduced. The output signal of the detector is recorded. This recorded signal is subsequently subtracted from the output signal during an actual analysis so that baseline drift and irregularities are eliminated.

3,590,629
DEVICE FOR THE CONTINUOUS DETECTION OF DUST IN THE ATMOSPHERE
Paul Courbon, Verneuil-En-Halatte, France, assignor to Charbonnages De France, Paris, France
Filed Apr. 6, 1970, Ser. No. #25,691
Claims priority, application France, Apr. 4, 1969, 69/10,594
Int. Cl. G01n *31/00*
U.S. Cl. 73—28 16 Claims



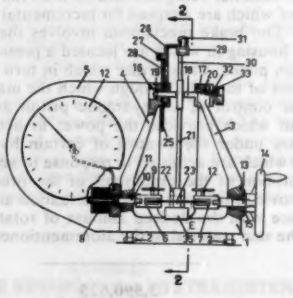
A thin filter element is mounted integrally with a centrifugal fanlike rotor so that when the rotor is rotated air will be drawn through the filter. This assembly is mounted within a fairly spaceous enclosure with limited ingress and egress orifices so that air will tend to be recirculated within the enclosure. Solid particles in the air entering the enclosure will tend to be collected in a spot at the center of the filter element, the size of the spot being a measure of the amount of dust in the air.

3,590,630
HARDNESS TESTER
Alf A. A. Ericksson, Nacka, Sweden, assignor to Aktiebolaget Swenska Precisionsverktyg, Nacka, Sweden
Filed Aug. 6, 1968, Ser. No. 750,639
Claims priority, application Sweden, Aug. 11, 1967, 11,395/1967
Int. Cl. G01n *3/44*
U.S. Cl. 73—83 5 Claims



A test specimen support is adjustable vertically to urge a specimen against the lower end of a vertically movable spindle, the upper end of which engages a loading beam at a point that is offset from the horizontal axis of the beam. The heavier end of the beam rests on the upper end of the spindle to preload the specimen as the support rises, and the opposite end of the beam is attached to an indicator which zeros when the beam has pivoted upwardly far enough to complete the preloading. At this time a first signal is produced to indicate that the main load, which overlies the heavier end of the beam, may be released. If the support is elevated too far, so that the beam is pivoted into contact with the main load during preloading, a second signal occurs, and the main load is prevented from being released.

3,590,631
STRENGTH TESTING OF RIGID PLASTIC MATERIALS
Andre Gonze, Koningsloo-Vilvorde, Belgium, assignor to Solvay & Cie, Brussells, Belgium
Filed Mar. 25, 1969, Ser. No. 810,168
Claims priority, application Belgium, Apr. 4, 1968, 56,716
Int. Cl. G01n *3/08*
U.S. Cl. 73—95 5 Claims



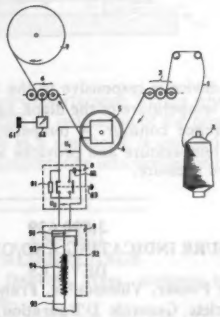
A method and apparatus for determining the brittleness of rigid plastic materials by subjecting samples of a material to be tested to a measured longitudinal tension and applying to the midpoint of the sample an impact of a type which produces a notch, the impact having a given energy content and a direction perpendicular to the direction of the applied

tension force. A measure of the brittleness of the material is obtained by determining the minimum tension force for which a given impact will rupture the sample.

3,590,632
PROCESS FOR MEASURING THE STRENGTH AND ELONGATION OF A CONTINUOUSLY TRAVELLING THREAD

Walter Gegenschatz, Uster, Switzerland, assignor to Zellweger, Ltd., Uster, Switzerland

Filed Nov. 13, 1968, Ser. No. 775,336
Claims priority, application Switzerland, Nov. 23, 1967, 16,488
Int. Cl. G01n *3/08*
U.S. Cl. 73—95.5 1 Claim

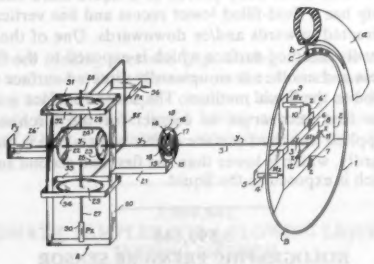


An electronic damping element is interposed between the force-measuring instrument and indicating instrument to produce a mean value from the signal emitted from the measuring instrument for recording as a smooth deviating line by the indicating instrument. The damping element can be switched on or off. The mean value can be preset by regulating the speed ratio between the roller assemblies.

3,590,633
STRESS MEASURING OF ROTATING BODIES

Wolfgang Fuhrmann; Rudolf Nusslein, and Waldmar Seifert, all of Nurnberg, Germany, assignors to Maschinenfabrick Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany

Continuation of application Ser. No. 683,642, Nov. 16, 1967. This application Mar. 9, 1970, Ser. No. 17,020
Int. Cl. G01m *17/02*; G01l *5/16*
U.S. Cl. 73—146 3 Claims

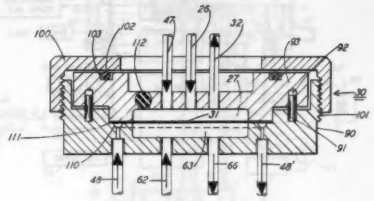


The tension and compression stresses and the flexural torque and maximum torque in a rotating body, such as a vehicle tire, are measured by dividing the tension and compression forces into the *x–x*, *y–y* and *z–z* axes and the moments into the M*x* and M*z* axes. Separate load cells are used to measure each force or moment, respectively.

3,590,634
INSTRUMENT FOR DETERMINING PERMEATION RATES THROUGH A MEMBRANE

Raphael A. Pasternak, San Mateo, and Jan F. Schimscheimer, Cupertino, both of, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed May 5, 1969, Ser. No. 821,905
Int. Cl. G01n *15/08*
U.S. Cl. 73—159 3 Claims

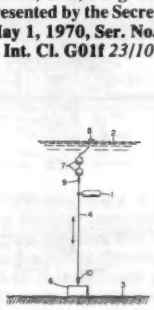


An instrument for determining permeation rates through a membrane having a permeation cell with upstream and downstream compartments arranged to hold a membrane therebetween, a line for continuously passing a gaseous permeant to the upstream cell compartment and from thence to the atmosphere, a line for passing a current of a carrier gas first to the downstream cell compartment and then to a permeant detector associated with a recorder, a bypass line for sending the carrier gas around the downstream compartment, as controlled by a valve in the line, and a heater for making controlled variations in the temperature of the permeation cell during the course of any given permeation rate test.

3,590,635
PYCNOCLINE FOLLOWER APPARATUS

Walter O. Duing, Miami, Fla., assignor to the United States of America as Represented by the Secretary of the Navy.

Filed May 1, 1970, Ser. No. 33,755
Int. Cl. G01f *23/10*
U.S. Cl. 73—170 A 7 Claims

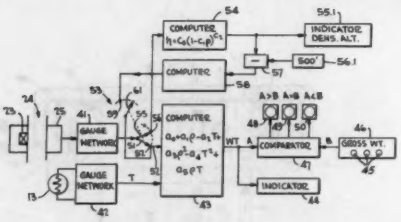


Observation and study of internal waves in the main pycnocline of an ocean area is achieved by providing a pycnocline follower capable of being prebalanced to a particular density within the range of a predetermined density gradient of the pycnocline. As internal wave conditions produce density variations the pycnocline follower moves up and down. A time-related pressure-recorder system carried by the follower provides data on the varying pressure which closely corresponds to the amplitude and period of the internal-wave-producing the movement. The follower is mounted on a thin wire that is anchored, buoyed and tensioned sufficiently to maintain a vertical disposition in the presence of anticipated horizontal currents. A plurality of spherical buoyant members are removably mounted in a casing of the follower to permit weight changes necessary to prebalance the follower to a desired density. The recording system is carried by one of the buoyant members.

3,590,636
METHOD FOR DETERMINING AIRCRAFT LIFT CAPABILITY USING AIR DENSITY MEASUREMENT

William C. Eddy, Jr., Columbus, Ohio, assignor to Industrial Nucleonics

Filed Oct. 25, 1968, Ser. No. 770,652
Int. Cl. G01c 21/00
U.S. Cl. 73—178 39 Claims

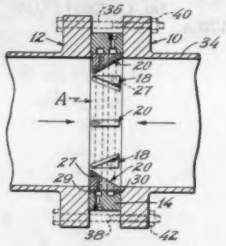


A lift indicator for either fixed or rotary wing aircraft includes a nucleonic density gauge for deriving a density altitude indicating signal and means for deriving a temperature indicating signal. The signals are nonlinearly combined to derive the lift indication which can be correlated to the ability of a rotary wing aircraft to take off or land vertically or for a fixed wing aircraft to take off from a runway of known length. The density altitude indicating signal is combined with an indicated airspeed signal derived from a pitot tube to derive a true airspeed-indicating signal.

3,590,637
FLOW METER

William R. Brown, 2756 N. Lexington Parkway, Saint Paul, Minn.

Continuation of application Ser. No. 630,855, Apr. 14, 1967, now abandoned. This application Dec. 17, 1969, Ser. No. 882,405
Int. Cl. G01p 5/16
U.S. Cl. 73—212 21 Claims



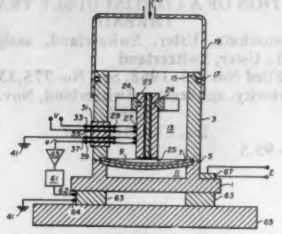
A ring-shaped differential-pressure-producing flow meter adapted to be inserted into a pipeline, the body portion having an internal diameter corresponding to that of the pipeline. One or more pressure-generating forms extend from the inner circumference of the body beyond the boundary layer of fluid flowing through the body. A piezometer tap is positioned in pressure-sensing relation to the pressure-generating forms.

3,590,638
THERMOELECTRIC PRESSURE SENSOR

Harry G. Anastasia, Hillsdale, N.J., assignor to The Bendix Corporation

Filed Oct. 22, 1969, Ser. No. 868,492
Int. Cl. G01l 9/10
U.S. Cl. 73—398 R 14 Claims

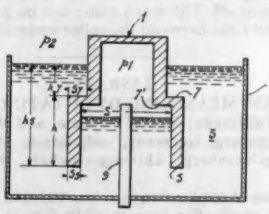
A pressure sensor having a bimetallic diaphragm that is subjected to a pressure and adapted to flex from a reference contour in response to a change in the pressure. A linear variable differential transformer positioned adjacent to the diaphragm provides a signal corresponding to the displacement of the diaphragm from the reference contour. A thermoelectric device is responsive to the transformer signal for varying the temperature of the diaphragm causing it to return to the reference contour. A temperature probe senses the diaphragm temperature and provides a signal corresponding to the sensed pressure.



3,590,639
PRESSURE INDICATING AND/OR REGULATING DEVICES

Yves Marie Ponsar, Villemonble, France, assignor to Degremont Societe Generale D'Epuration Et D'Assainissement, Rueil Malmaison, France

Filed Sept. 23, 1968, Ser. No. 761,621
Claims priority, application France, Sept. 27, 1967, 122400
Int. Cl. G01l 7/72
U.S. Cl. 73—404 13 Claims



A pressure measuring and/or regulating device incorporating a movable solid body placed in a liquid-filled chamber. The body has a fluid-filled lower recess and has vertical surfaces directed upwards and/or downwards. One of these is a downwardly directed surface which is exposed to the fluid in the recess and another is an upwardly directed surface which is exposed to the liquid medium. The second surface is higher than the first and serves to correct for the Archimedean thrust applied to a third surface of this body which is directed downwardly, which is lower than the first and second surface, and which is exposed to the liquid.

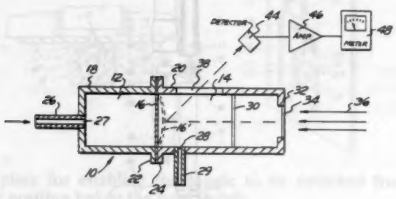
3,590,640
HOLOGRAPHIC PRESSURE SENSOR

Ivan Cindrich, Southfield, Mich., assignor to Chain Lakes Research Corporation, Detroit, Mich.

Filed Apr. 24, 1969, Ser. No. 819,028
Int. Cl. G01l 7/08
U.S. Cl. 73—406 10 Claims

A pressure sensor consisting essentially of a deformable diaphragm having a side subjected to the action of a fluid, liquid or gas, whose pressure is sought to be measured. The

other side of the diaphragm is illuminated by an image of the diaphragm at rest which is reconstructed from a hologram. The interference of the light from the reconstructed hologram image of the diaphragm and the light reflected from the



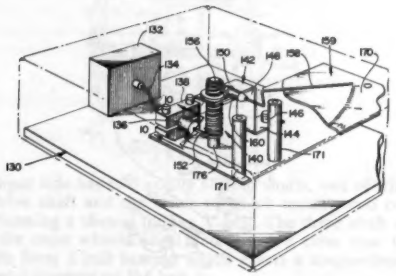
actual diaphragm creates interference fringes whose number and arrangement provide an indication of the pressure of the fluid. A detector, such as a photocell, is coupled to a meter for providing a visual quantitative information of the pressure of the fluid.

3,590,641

PRESSURE GAGE

Gerard D. Eggleston, Danvers, Mass., assignor to Microdot Inc., Westwood, Mass.

Filed June 6, 1968, Ser. No. 735,128
Int. Cl. G01l *7/04*
U.S. Cl. 73—418 **7 Claims**



A direct reading pressure gage having a coupler chamber at one end and a Bourdon tube on the other connected by a capillary tube. The coupler chamber, capillary and Bourdon tubes are filled with a liquid having a total volume in the order of 0.004 cubic inch to minimize volumetric displacement.

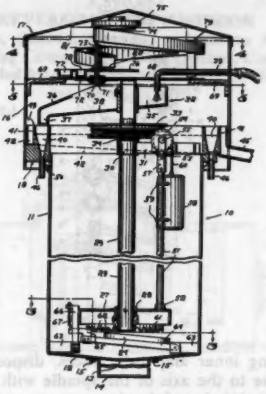
3,590,642

AUTOMATIC SAMPLER FOR A FLOWING LIQUID AND TESTING METHOD

Kai Lennart Rost, The Ledges, Hallowell, Maine

Filed Feb. 14, 1969, Ser. No. 799,326
Int. Cl. G01n *1/10*
U.S. Cl. 73—424 **14 Claims**

A sampler is disclosed for automatically taking samples from a flow at approximately uniform intervals and of approximately equal volumes. The sampler has a rotatable distributor for delivering liquid from the flow successively into a series of outlets, each in communication with the appropriate one of a series of sample containers. Each collected sample may be separately tested or a composite established with a



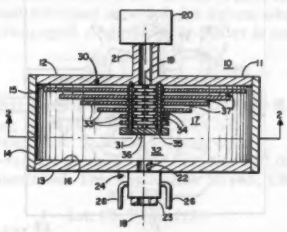
percentage from each sample that is proportional to the rate of flow that existed at the time that sample was taken.

3,590,643

FLUID VORTEX ANGULAR MOTION SENSOR

Walter M. Posingies, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 14, 1969, Ser. No. 866,310
Int. Cl. G01p *3/26*
U.S. Cl. 73—505 **10 Claims**



Fluid vortex apparatus including a vortex chamber, a characterized coupling element comprising a stack of spaced annular discs for introducing fluid into the vortex chamber, and a fluid outlet from the vortex chamber. The coupling element is characterized so that different portions of the fluid are introduced into the vortex chamber at different distances from the outlet, and are thus subject to different transfer characteristics in traversing the chamber. The annular discs in the coupling element are separated by predetermined small distances chosen to provide great viscous coupling between the discs and the fluid flowing therebetween. A sensor associated with the outlet passage produces a signal indicative of a summation of the modifications to rotational velocity of flow about the axis of the outlet, thereby resulting in a characterized response to input stimuli.

3,590,644

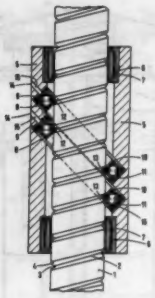
THREADED SPINDLE AND SLEEVE MEANS

Max Kuspert, Markt, 46 Walders hof, Germany

Filed May 16, 1969, Ser. No. 825,201
Claims priority, application Germany, May 21, 1968, P 17 50 637.5
Int. Cl. F16h *25/12*
U.S. Cl. 74—57 **10 Claims**

There is disclosed a threaded spindle and sleeve means including an externally threaded spindle means, a sleeve means

surrounding the same and means for guiding the rotary and translatory movements of the spindle means relative to the sleeve means comprising at least one rolling contact bearing



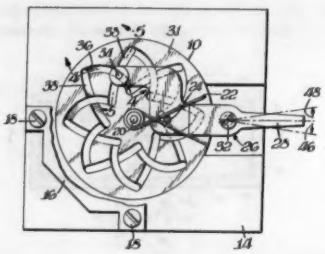
unit including inner and outer races, disposed to lie in a plane oblique to the axis of the spindle with the outer race secured in the interior of the sleeve means and the inner race engaging the thread of the spindle.

3,590,645

BIDIRECTIONAL STEPPING MECHANISM

Salvatore J. Magri, Sunnyvale, and John E. Nidecker, Menlo Park, both of, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 21, 1969, Ser. No. 826,609
Int. Cl. F16h *27/02*
U.S. Cl. 74—88 **10 Claims**



A disclike camming wheel has a pattern of intersecting grooves cut in one face thereof. A lever-operated pin, biased to a center position within one of the grooves, is operated radially of the disc face in such a manner that when the pin is moved outwardly from the axis of rotation, the cam wheel is rotated in the opposite direction. The depth of tee grooves is varied such that a detent action is achieved to hold the cam wheel in a fixed position.

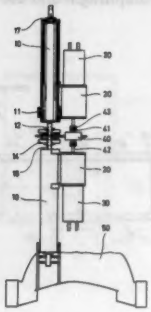
3,590,646

APPARATUS FOR EXTENDING THE LIFT ENGINES OF A VTOL AIRCRAFT

Fridolin Werner Bredl, Germering, Germany, assignor to Entwicklungsring Sud G.m.b.H., Munich, Germany

Filed Aug. 22, 1969, Ser. No. 852,338
Claims priority, application Germany, Sept. 13, 1968, P 17 81 235.0
Int. Cl. F16h *3/70*
U.S. Cl. 74—89.15 **3 Claims**

An apparatus for extending the lift engines of a VTOL aircraft from a stowed position within the fuselage to an extended operative position. Each of the engines are supported upon a jackscrew. serving to drive each of the jackscrews is a planetary drive which is actuated by a motor. Each of the planetary drives includes a shaft which is coupled to a universal joint. The universal joints are connected to a bearing. The adjacent ends of the jackscrews are rotatably pinned to levers



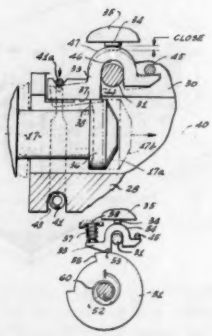
which coact upon a lost-motion-compensating means. Energizing of the motors results in actuation of the jackscrews which correspondingly produces movement of the engines.

3,590,647

SNAP-ACTION SWITCH-OPERATING MECHANISM

Carl Eugene Monnich, Granada Hills, Calif., assignor to Sterer Engineering and Manufacturing Company, Los Angeles, Calif.

Filed Dec. 18, 1968, Ser. No. 784,736
Int. Cl. F16h *21/44*
U.S. Cl. 74—100 **10 Claims**



A switch-actuating mechanism is designed to give a snap action to either make or break an electrical circuit in a fast, positive manner. The switch is held firmly open or closed until the time of actuation is reached and is thus insulated from the adverse effects of shock and vibration. The operating mechanism is especially adapted to operate overcenter types of switches wherein the switch contacts are subject to chatter when near the center of shifting position.

3,590,648

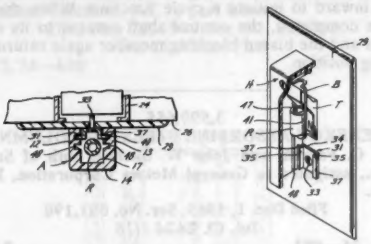
REMOTE LIGHT-SWITCHING APPARATUS

De Witt Y. Gorman, P.O. Box 26323, Houston, Tex.

Filed Aug. 19, 1969, Ser. No. 851,305
Int. Cl. F16h *21/44*
U.S. Cl. 74—103 **2 Claims**

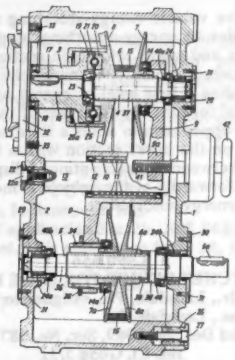
An extension arm for remotely actuating a light switch wherein the upper end of the extension arm is operably con-

nected to the toggle arm of a light switch by means of a bail slidably mounted in a housing secured to the light switch



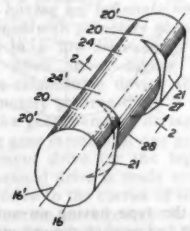
cover plate for enabling the toggle to be switched from a remote position below the light switch.

3,590,649
CONTINUOUSLY VARIABLE V-BELT DRIVE
Heinz Fischer, Obergosgen, Switzerland, assignor to Meier & Co., Niedergosgen (Canton of Soleure), Switzerland
Filed June 11, 1969, Ser. No. 832,224
Claims priority, application Switzerland, June 18, 1968, 9010/68
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 **3 Claims**



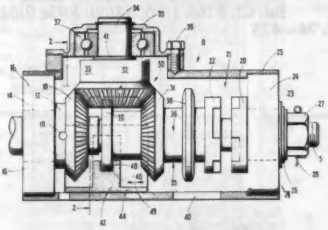
The input side has two axially aligned shafts, one of which is the drive shaft and the other of which mounts two cone wheels forming a sheave for the V-belt. The drive shaft and one of the cone wheels each incorporate a cone race that with balls form a ball bearing which exerts a torque-dependent lateral pressure on the belt.

3,590,650
CUTTER CHAIN
Lester G. Rollins, 650 Forest Lane, Franklin, Pa.
Filed Apr. 2, 1969, Ser. No. 812,759
Int. Cl. F16g *13/04*
U.S. Cl. 74—254 **9 Claims**



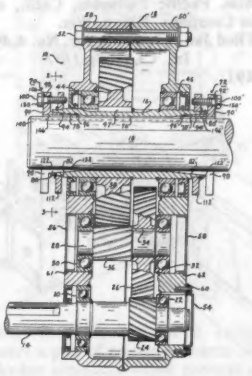
A cutter chain employing pintless having noncircular end portions providing nonrotative retention of the pintless in the cutter-carrying links and a central portion recessed along one side to allow space for greater than normal sprocket tooth size relative to a given pitch length.

3,590,651
REVERSIBLE TRANSMISSION
Ulric Vallieres, Quebec, Canada, assignor to St. Lawrence Manufacturing Company, Giffard, Quebec, Canada
Filed May 7, 1969, Ser. No. 822,508
Int. Cl. F16h *57/02*
U.S. Cl. 74—404 **10 Claims**



A reversible transmission assembly for power transmission in which drive means and driven means are selectively interengaged by a gear train having three gears, with one operatively secured to the drive means, another to the driven means and the third selectively interengageable with either of the first two for turning the driven means in selected directions. The driven gear is mounted for axial movement away from the first gear means to a disengaging relation with the gear train. A clutch has one clutch half operatively secured to the second gear and the other clutch half operatively driven by the drive means with these two clutch halves adapted to interengage when the driven gear is disengaged from the gear train to drive the driven means in a direction opposite to that direction in which it's driven when the three gears are interengaged. A simple gear shifter is provided.

3,590,652
SLEEVE AND BUSHING STRUCTURE FOR A TORQUE ARM SPEED REDUCER
Robert E. Strang, R.R. 2, North Liberty, Ind.
Continuation-in-part of application Ser. No. 617,002, Jan. 27, 1967, now abandoned. This application Nov. 5, 1969, Ser. No. 874,357
Int. Cl. F16n *1/20*
U.S. Cl. 74—421 **8 Claims**



The combination of a shaft-mounted speed reducer and a sleeve and bushing structure therefor, in which a sleeve having a bore therein is concentrically mounted on a shaft and secured thereto by split bushings at each end of the sleeve extending into the bore and urged into securing position by a

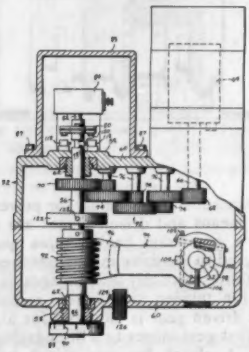
plurality of screws extending through the bushing into a collar on the sleeve at each end thereof. The collars are rotatable relative to each other and to the sleeve on which they are mounted.

3,590,653

MEANS FOR TRIMMING THE POSITION OF CONTROL ELEMENTS

Hubert Dreckmann, and Charles B. Wilson, both of Michigan City, Ind., assignors to The Hays Corporation, Michigan City, Ind.

Filed Jan. 2, 1970, Ser. No. 183
Int. Cl. F16h *1/16, 35/00;* F02c *9/04*
U.S. Cl. 74—425 12 Claims



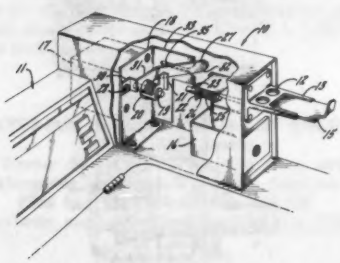
Means for trimming the position of a controlled element responsive to a power-actuated controller having a rotatable shaft for causing actuation of the controlled element. A housing member is journaled on the controller shaft and includes a part which is connected to the controlled element. The housing member has a shaft journaled thereto which is spaced from the controller shaft. Meshing gears interconnect the housing member shaft and the controller shaft. A power actuated unit is carried by the housing member and serves to rotate the housing member shaft. The degree of rotation of the housing member shaft is monitored by a signal device carried by the housing member.

3,590,654

DEVICE FOR PREVENTING DEFEAT OF SLIDE-OPERATED MECHANISMS

Donald N. Butte, Pacific Palisades, Calif., assignor to McGraw-Edison Company, Ripon, Wis.

Filed Jan. 21, 1970, Ser. No. 4,490
Int. Cl. G05g *1/07*
U.S. Cl. 74—491 4 Claims



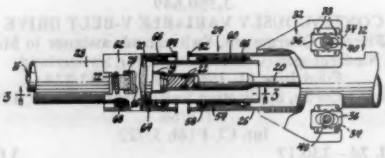
A retractable blocking member is provided to prevent defeat or improper operation of a slide-operated timing mechanism in a coin-operated machine. The blocking member is normally biased into blocking relationship with a timer control shaft which must be depressed to initiate an operating cycle of the mechanism, and an arm extends from the blocking member toward the coin slide. Inward movement of the slide retracts the arm and blocking member from the blocking position, allowing the control shaft to be shifted axially inward to initiate a cycle function. When the timed cycle is completed, the control shaft returns to its original position and the biased blocking member again returns to its blocking position.

3,590,655

ENERGY-ABSORBING STEERING COLUMN

Robert C. Farrell, and John W. Skelley, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1969, Ser. No. 881,190
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 9 Claims



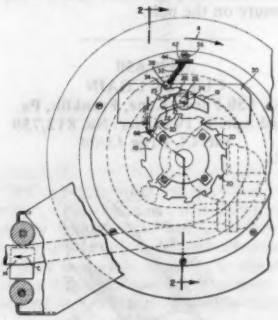
An automotive vehicle energy-absorbing steering column assembly includes an energy-absorbing support jacket comprised of upper and lower telescopic sections having interposed therebetween a ball-type energy-absorbing deformer structure providing a first level of energy absorption for an initial amount of forward displacement of the steering wheel whereafter the upper section abuts a third section telescopically mounted on the lower section with a further ball-type structure therebetween so that continued displacement of the steering wheel forwardly of the vehicle is met with a second higher level of energy absorption.

3,590,656

RATCHET DEVICE FOR HOSE REEL

Otis S. Lloyd, Jr., Lansdale, Pa., assignor to William M. Wilson's Sons, Inc., Lansdale, Pa.

Filed Dec. 24, 1969, Ser. No. 887,899
Int. Cl. G05g *5/12*
U.S. Cl. 74—575 5 Claims

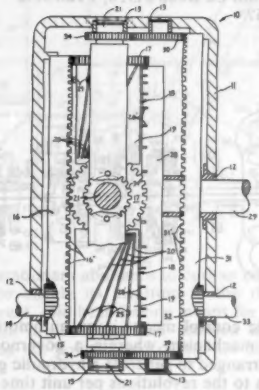


A hose reel of the type having an automatic rewinding motor and a ratchet and pawl stop mechanism is improved by a redesigned floating pawl and redesigned ratchet teeth. Both the pawl and the teeth are provided with cammed surfaces providing a means for positively actuating the pawl so that it does not hang up on deadcenter.

3,590,657
VARIABLE GEAR TRAIN RATIO

James C. Cochrane, Jr., Raleigh, N.C., assignor to Walter K. Gladden, Charlotte, N.C., a part interest

Filed May 23, 1969, Ser. No. 827,190
Int. Cl. F16h *33/00*
U.S. Cl. 74—640 5 Claims

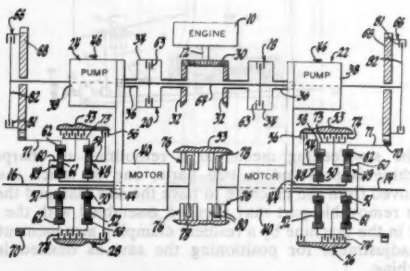


In abstract, a preferred embodiment of this invention is a gear train using a generally flat output gear having teeth radiating outwardly from its center area and radially disposed cylinders with longitudinally slidable teeth therein to engage the output gear to vary the output to input gear ratio.

3,590,658
POWER TRAIN

Robert M. Tuck, Indianapolis, Ind.

Continuation of application Ser. No. 502,863, Oct. 23, 1965, now abandoned. This application Sept. 28, 1967, Ser. No. 671,464
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 8 Claims

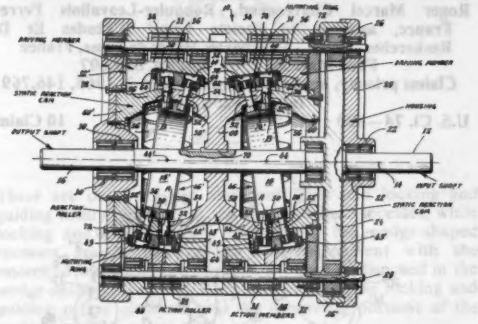


A power train having an infinitely variable ratio hydrostatic drive combined with planetary gearing to provide a full hydrostatic drive in a low-drive range and at least one hydromechanical drive in a higher drive range with synchronous drive-establishing device shifting between the drives. In the planetary gearing there is a pair of planetary gear sets having like gear members driven by the hydrostatic drive with the ring gear member of one gear set having selective mechanical input drive for the high-drive range. An added hydromechanical drive is made available by selective mechanical input drive to the carrier of the other gear set. A dual output power train arrangement is provided by a forward and reverse input drive to two of the above described drive arrangements to provide separate power train outputs whereby there are provided the same drives in forward and reverse and, in addition, steering is available by establishing a speed differential between the two outputs.

3,590,659
NUTATING SPEED CHANGING MECHANICAL TRANSMISSION

Arthur M. Maroth, Wilton, Conn.

Filed Dec. 29, 1969, Ser. No. 888,756
Int. Cl. F16h *1/28*
U.S. Cl. 74—800 19 Claims

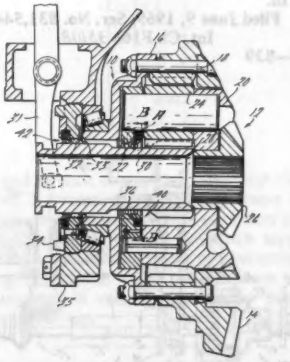


A speed changer apparatus wherein a nutating member having force transfer members in the form of roller elements nutatively contacts inclined surfaces on an action member coupled to an output shaft. The nutating member is prevented from rotation by stationary mounted inclined surfaces which are contacted by force transfer members. The nutating member is peripherally engaged by a rotating driving member coupled to a rotating input shaft. The driving member is provided with a surface shaped to impart nutative motion to the nutating member. Excellent axial balance is obtained by operating a pair of nutating sections with opposing axial motions with respect to each other.

3,590,660
SHIFT BLOCKER

Warren G. Bopp, Farmington, Mich., assignor to Eaton Yale & Towne, Cleveland, Ohio

Filed Aug. 18, 1969, Ser. No. 851,015
Int. Cl. F16d *23/06*
U.S. Cl. 74—781 R 28 Claims



A transmission shift blocker for a coupling member adapted to connect a pair of power elements of the type having a pair of blocker elements which prevent shifting of the coupling member except when in a particular position relative each other, with this positioning determined by the difference in angular speed of the power elements to be connected and arranged to allow shifting at low relative angular speeds but not at higher relative angular speeds, featuring damping of the relative movement of the blocker elements in order to improve reliability and also having a camming action

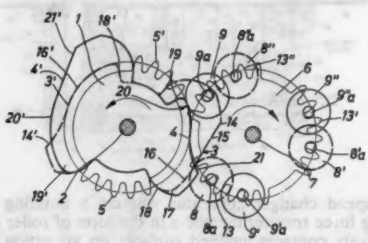
between them to increase the damping force under dynamic conditions and to accurately control their response to the relative angular speeds of the connected power elements, so that the relative angular speeds at which the blocker becomes effective may be more precisely controlled.

3,590,661

DEVICE FOR DRIVING AND FOR THE ACCURATE AND STABLE POSITIONING OF ROTARY ELEMENT

Roger Marcel Chaveneaud, Rouquier-Leavallois Perret, France, assignor to Societe Lamy D'Etudes Et De Recherches "Soler", Courbevoie Hauts de Seine, France

Filed Mar. 26, 1969, Ser. No. 810,607
Claims priority, application France, Apr. 2, 1968, 146,769
Int. Cl. B23q *17/18*
U.S. Cl. 74—820 **10 Claims**



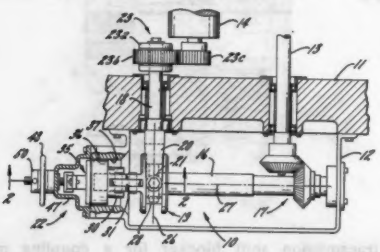
The device according to the present invention comprises means for driving and positioning a rotary element whereby the latter is driven by at least one driving element in accordance with a cyclic program which can be performed in one or more revolutions of the driving element or elements and/or of the driven element, the device being adapted to operate in both directions of rotation, the program being composed, in succession and inalternation, of a homokinetic drive and of a nonhomokinetic drive, and the rotation of the driven element, measured by the rotation of the driving element, being any predetermined function of the program.

3,590,662

FOUNTAIN ROLLER INDEXING DRIVE FOR PRINTING PRESS

Leonard L. Tafel, La Grange, Ill., and Larry G. Taylor, Plano, Tex., assignors to Miehle-Goss-Dexter Incorporated, Chicago, Ill.

Filed June 9, 1969, Ser. No. 831,544
Int. Cl. F16h *35/08*
U.S. Cl. 74—839 **3 Claims**



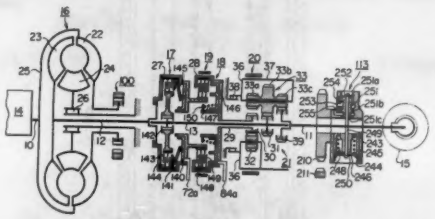
A printing press fountain roller drive, in which an annular member is radially inclinable upon a press-driven shaft, and is connected to a yoke and yoke shaft, for changing the press drive train motion to an oscillating motion of variable magnitude. A one-way drive is attached to the yoke shaft for changing the oscillatory yoke shaft motion to an intermittent indexing motion of variable magnitude in the fountain roller.

3,590,663

HYDRAULIC PRESSURE CONTROL MEANS FOR AUTOMATIC FLUID SPEED CHANGE MECHANISM

Hiroji Yamaguchi; Noboru Murakami, and Koichiro Hirozawa, all of Kariya-shi, Aichi-ken, Japan, assignors to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan

Filed May 29, 1969, Ser. No. 828,895
Claims priority, application Japan, May 31, 1968, 43/37229
Int. Cl. B60k *21/10*; F16h *5/42*
U.S. Cl. 74—867 **3 Claims**



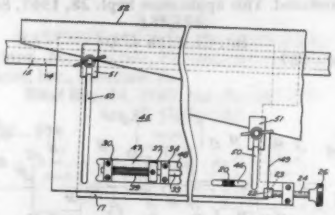
An automatic control means in an automotive automatic speed change mechanism wherein a governor valve is so designed and arranged to generate a hydraulic governor pressure in relation to the revolutions per unit time of the driven shaft of said mechanism and in reversed relation to the throttle valve pressure which is delivered thereto from a throttle control valve.

3,590,664

MEANS FOR MOUNTING A HAND SAW IN A RETOOTHING OR SHARPENING MACHINE

Sulo A. Aijala, Attleboro, Mass., assignor to Intricate Machine & Engineering Inc.

Filed Dec. 1, 1969, Ser. No. 881,010
Int. Cl. B23d *63/12*
U.S. Cl. 76—43 **4 Claims**



The saw-feeding means in a retoothing or sharpening machine is provided in two parts, one of which may be removed from the machine to have the saw clamped thereto. This removable part may then be assembled with the fixed part in the machine by a resilient clamping arrangement with an adjustment for positioning the saw as desired in the machine.

ERRATA

For Classes 77—69, 77—62 see:
Patent Nos. 3,591,306 and 3,591,307

3,590,665

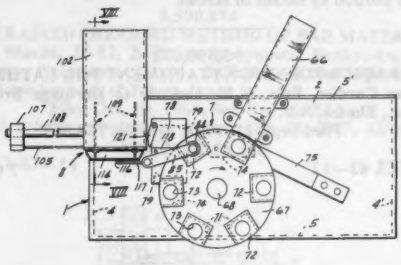
AUTOMATIC PIN FORMING AND INSERTING MACHINE

Frank J. Wallace, Chicago, Ill., assignor to Adcraft Mfg. Co., Chicago, Ill.

Filed Dec. 18, 1968, Ser. No. 784,817
Int. Cl. A44b *1/06*
U.S. Cl. 79—1 **13 Claims**

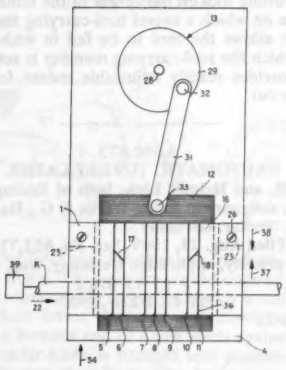
A button and pin assembly machine for producing badges and the like comprising buttons having rearwardly extending

rims adapted to receive and retain respective pin structures therein, in which the buttons are sequentially supplied to a pin-forming head and supported thereat with the button rim encircling the end of such head, straight pin blanks being sequentially supplied to said head, with a portion of a pin blank being inserted into the head and rotated thereby with



respect to a stationary abutment to curl an end of such blank sufficiently to enable its insertion in the rim of a button disposed thereat, said head having means for forming a bend in the portion of the pin blank inserted in such head to resiliently bias the pointed end of the pin blank toward the button.

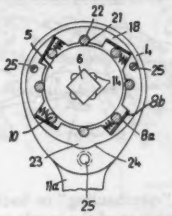
3,590,666
DEVICE FOR STRIPPING COAXIAL CABLE
Adolf Langer, Munich, Germany, assignor to Pressluft-Stolzel OHG., Nurnberg, Germany
Filed June 10, 1969, Ser. No. 831,968
Claims priority, application Germany, June 14, 1968, P 17 65 588.8
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **7 Claims**



An apparatus for stepwise stripping or barring a coaxial cable generally comprises a base member supporting a bladeholder, a series of parallel, spaced cutting blades depending from the bladeholder at varying distances corresponding to requisite depths for stepwise severing of the cable, and means cooperating with the bladeholder and including a reciprocally moved plate for rolling a coaxial cable along the blades.

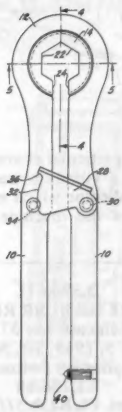
3,590,667
UNIVERSAL RATCHET STEPLESS-ACTING WRENCH
Adolf O. Berglein, Lange Laube 19, 3000 Hannover, Munich, Germany
Filed Feb. 21, 1968, Ser. No. 707,120
Int. Cl. B25b *13/00*
U.S. Cl. 81—59.1 **2 Claims**

An universal ratchet stepless-acting wrench comprises a flat carrier and a lever arm projecting from it. The arm is rigidly connected to at least one part of the carrier and the latter is subdivided into one middle main part and two outer cover plates on opposite sides of the middle main part and attached to it. A rotary body lies in central openings of the middle main part and the outer cover plates of the carrier. The carrier includes wedge-shaped recesses in the middle main part opposite the smoothed surface of the rotary body.



There are outer straight abutment faces and locking and guiding rotary elements in the wedge-shaped recesses, while locking and guiding rotary elements in the wedge-shaped recesses are in freewheeling interengagement with the smoothed surface of the rotary body. Springs disposed in the wedge-shaped recesses are adapted to press the locking and guiding rotary elements into the narrowing portions of the wedge-shaped recesses.

3,590,668
RESILIENT-CLAMPING WRENCH WITH COMPRESSIBLE SLIT RING INSERTS
Ross Bristol, 1201 Ashford Drive, Bissell Hills, Mo.
Filed Dec. 6, 1968, Ser. No. 781,822
Int. Cl. B25b *13/52*
U.S. Cl. 81—64 **10 Claims**

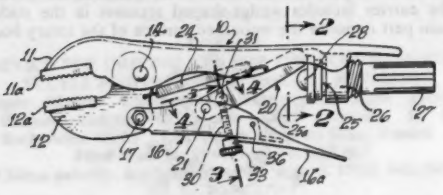


A closed end wrench comprising a resilient clamp of hairpin form with a compressible, slit ring insert in the bight thereof, which slit ring has a circular periphery and a noncircular nut-engaging inner surface, in which torque is transmitted from the clamp to the insert by squeezing the legs of the clamp together and in which the maximum torque which can be transmitted is variably limited by adjustable stop means between the legs.

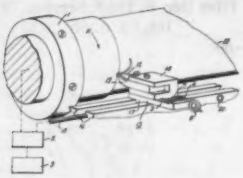
3,590,669
PLIERS WITH ADJUSTABLE TOGGLE LOCK
Vincent Marasco, 1364 N. Western Ave., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 530,315, Feb. 28, 1966, now abandoned. This application Jan. 30, 1968, Ser. No. 701,613
Int. Cl. B25b *7/12*
U.S. Cl. 81—372 **11 Claims**

Pliers with a toggle-type grip lock have a large diameter adjusting screw with a high helix angle on the thread to ena-

ble the operator to make a quick, easy adjustment of the jaw spacing. The contact between the end of the screw and the toggle is eccentric on the screw in order to lock the adjustment screw against "overhauling" or backing off. Adjustable means regulate movement of the toggle toward open position and thus the gripping pressure when the jaws are closed.

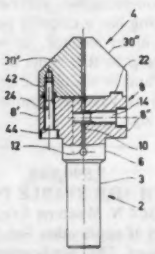


3,590,670
MACHINE TOOL CUTTING INDICATION AND CONTROL
Robert A. Thompson, Windham; Stephen E. Grabkowski, Schenectady, both of, N.Y., and Raymond A. Mathieu, Burlington, Vt., assignors to General Electric Company
Filed Mar. 24, 1969, Ser. No. 809,900
Int. Cl. B23b 3/06
U.S. Cl. 82—1 R **2 Claims**



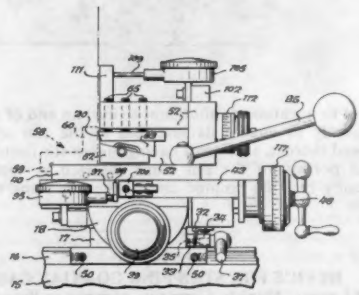
A high pass filter of particular characteristics is provided in the signal path from a vibration transducer attached to a machine tool to an indicator which enables the indicator to reliably indicate when the machine tool is performing a cutting operation.

3,590,671
COUNTERBORE OR BURR REMOVAL TOOL
Marcel Wahli, Riedenhaldenstrasse 37, Zurich, Switzerland
Filed Aug. 5, 1969, Ser. No. 847,549
Claims priority, application Switzerland, Aug. 6, 1969, 11,756/68
Int. Cl. B23b 51/10
U.S. Cl. 82—1.4 **6 Claims**



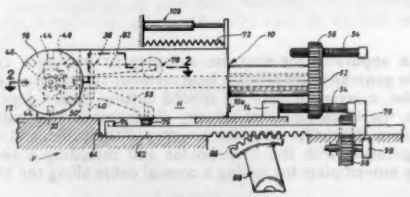
A novel counterbore or burr removal tool is disclosed, the tool having a cylindrical head portion and an axially extending shaft connected thereto with at least two knife inserts detachably connected to the facing side of the head portion. The head portion contains a diametrically extending slit which extends into the shaft portion. A screw penetrates the head portion and extends transversely to the axis of the tool for altering the clearance angle of the knives. The facing side of the head portion is provided with ring or annular guide grooves and ribs which engage corresponding ribs and grooves on each knife, the knives being firmly secured to the head portion by means of screws.

3,590,672
RADIUS-TURNING ATTACHMENT FOR LATHES
James Cordier, Erin, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Sept. 11, 1968, Ser. No. 759,065
Int. Cl. B23b 5/40
U.S. Cl. 82—12 **7 Claims**



This disclosure is of an attachment for lathes by means of which highly accurate work can be done so that the attachment may be used, for example, by forming contact lenses and in which two slides are provided, a cross-slide for setting the cutting tool on the center of the lathe spindle, and another slide on which a swivel tool-carrying member, which arrangement allows the tool to be fed in without changing radius for which the tool-carrying member is set. This disclosure also provides readily adjustable means for setting the radius of the cut.

3,590,673
AUTOMATIC TURRET LATHE
Gerhard Foll, and Helmut Link, both of Esslingen (Neckar), Germany, assignors to Index-Werke K G., Hahn & Tessky, Esslingen, Neckar, Germany
Filed Aug. 25, 1969, Ser. No. 852,717
Claims priority, application Germany, Aug. 31, 1968, P 17 77 070.6
Int. Cl. B23b 21/00
U.S. Cl. 82—21 **28 Claims**



An automatic turret lathe wherein the carriage is reciprocable from a retracted position to several forward positions and supports an indexible turret for a given number of tool holders. The carriage is reciprocated by a toothed rack which is movable between two end positions and transmits motion to the carriage during a portion of its forward movement by way of one of several adjustable threaded bolts which are indexible with reference to the carriage and one of which is in registry with a dead stop to arrest the the carriage

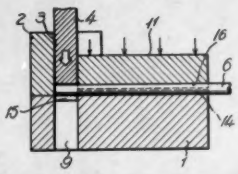
in that forward position which is best suited for treatment of a workpiece by the tool in the corresponding tool holder. The turret is indexible in response to indexing of a support for the bolts. A locking device which prevents indexing of the turret in each forward position of the carriage is disengaged by the rack while the latter moves relative to the carriage.

3,590,674

RESTRAINED SHEARING METHOD OF BAR MATERIAL

Teizo Maeda, 30-12, 2-Chome, Kohyunata, Bunkyo-ku, and Takeo Nakagawa, 21-44 5-Chome, Kami-Saginomiya, Nakano-ku, both of Tokyo, Japan

Filed Oct. 10, 1968, Ser. No. 766,524
Claims priority, application Japan, Oct. 12, 1967, 42/65174
Int. Cl. B23d *15/04*
U.S. Cl. 83—14 1 Claim



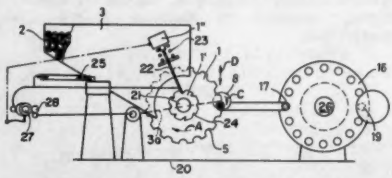
Method of shearing bar material workpiece by holding the bar workpiece at positions adjacent to the point of shearing so as to restrain axial movement while pressure shearing by vertical movement against the axis of the workpiece.

3,590,675

APPARATUS FOR AND METHOD OF MAKING FILTER RODS FOR FILTER TIP CIGARETTES

Otto Kappeler, Trossingen, and Siegfried Sudrow, Bunzwangen, both of, Germany, assignors to Efka-Werke Fritz Kiehn G.m.b.H., Trossingen, Germany

Filed Aug. 14, 1969, Ser. No. 850,072
Int. Cl. B26d *7/06*
U.S. Cl. 83—98 6 Claims



Filter rods for filter tip cigarettes are cut from tows of cellulose acetate fibers. The tows are placed coaxially in front of a jet emitting continuously or intermittently a stream of compressed air which drives the tows successively against a detent. When the forward end of a tow abuts against the detent a movable circular knife is brought into position to sever a segment of the two therefrom. The knife is mounted at a predetermined distance from the detent, so that the portions of the two which are separated by the action of the knife are of uniform and precisely controlled length. Retraction of the knife following the cutting operation and lateral transport of the cut segments permits the uncut tow to advance by the force of the airblast until it rests at its forward end against the detent, whereby the operation is repeated.

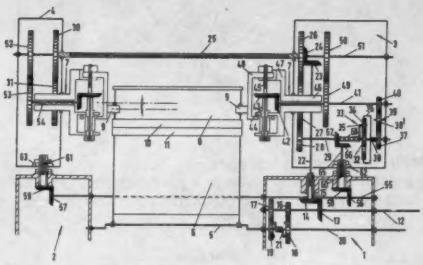
3,590,676

GRIPPER SHEARS

Manfred Fritz, Dusseldorf-Erkrath, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Oct. 3, 1968, Ser. No. 764,759
Claims priority, application Germany, Oct. 6, 1967, P 16 27 288.1
Int. Cl. B23d *25/02*
U.S. Cl. 83—311 10 Claims

In a flying shear for transversely cutting moving rolled stock, it is desirable to provide means for altering the length of rolled stock which is to be cut. The flying shear has means for matching the tangential velocity of the knives to the velocity of the stock and has means for altering the interval between cuts of the knives. The flying shear includes a first knife carrier pivotably mounted on a rotatable drive crank, a second knife carrier pivotably mounted on the shear base,



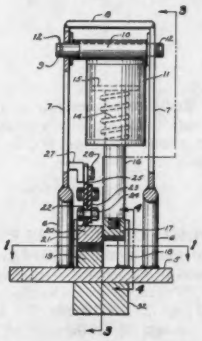
the knife carriers having arms which are pivotably connected, and means for adjusting the throw of the crank and compensating adjustment means for adjusting the distance between the axis of the crank and the stock to be cut, so that adjustment of the adjusting means and the drive speed of the crank with respect to the rate at which stock is supplied permits the length of stock cut to be adjusted.

3,590,677

BOLT CUTTERS

Maynard B. Smith, R.F.D. 2, Freeport, Maine

Filed May 1, 1969, Ser. No. 820,742
Int. Cl. B26d *7/02*
U.S. Cl. 83—454 7 Claims



Cutters for externally threaded members are disclosed that have a clamp for holding the threaded member with a part that is fixed and a part that is movable. A power operated shear element and the fixed part of the clamp have coacting shear edges and the clamp is also operable as a die for reforming thread formations damaged during shearing.

3,590,678

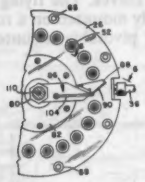
EXTRUSION APPARATUS WITH A CUTTING MECHANISM HAVING MEANS TO STOP THE CUTTER AT A PREDETERMINED POSITION

Mark Hasten, and Floyd Lobash, both of Minneapolis, Minn., assignors to General Mills, Inc.

Division of Ser. No. 596,846, Nov. 25, 1966, Pat. No. 3,464,086.
This application July 31, 1969, Ser. No. 868,257
Int. Cl. B26d *5/00*
U.S. Cl. 83—593 1 Claim

An apparatus for slicing ropes of extruded material into predetermined lengths as the ropes are forced through extru-

sion orifices in an extrusion apparatus. A motor and clutch are provided for activating the slicing apparatus. A brake, a



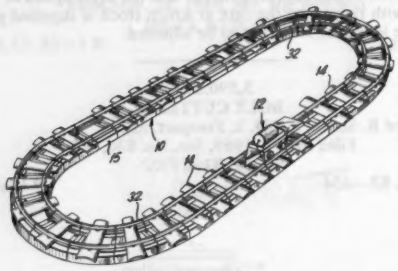
rotatable cam, and a cam sensing device are provided for stopping the slicing apparatus at a predetermined location, so that none of the orifices are blocked by the slicing apparatus.

3,590,679

XYLOPHONE-TYPE TOY

Joseph Law, Kowloon, Hong Kong, assignor to Cragstan Industries, Inc., New York, N.Y.

Filed Jan. 10, 1966, Ser. No. 519,721
Int. Cl. G10f *1/08*
U.S. Cl. 84—102 **5 Claims**



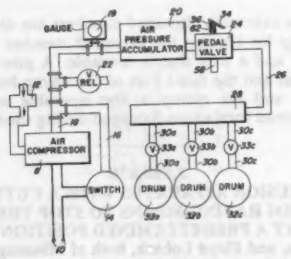
A musical toy railroad comprising a track composed of sound emitting bodies, toy vehicle moving along said track and striking said sound emitting bodies during movement along said track so as to play a tune.

3,590,680

APPARATUS FOR CHANGING THE PITCH OF DRUMS

Scott Carnes, East Aurora, and Richard J. Gail, Albany, both of, N.Y., assignors to Pneumatic Drum System, Inc., Oneonta, N.Y.

Filed Feb. 27, 1970, Ser. No. 14,967
Int. Cl. G10d *13/02*
U.S. Cl. 84—411 **8 Claims**



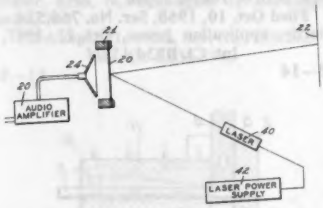
An apparatus for changing the pitch of drums, comprising a source of compressed gas, a container for holding said compressed gas at a constant pressure and valve means for selectively conducting said pressurized gas into drums, and selectively releasing pressurized gas from said drums, the drums being raised in pitch when pressurized. Also means for independently adjusting the pitch to which each drum may be raised.

3,590,681

APPARATUS FOR PRODUCING A VISUAL DISPLAY

Lloyd G. Cross, Ann Arbor, Mich., assignor to Sonovision, Inc., Ann Arbor, Mich.

Filed Nov. 27, 1968, Ser. No. 779,510
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **4 Claims**



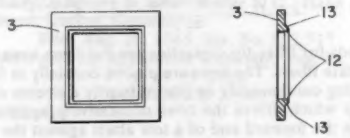
A device for producing a visual display which is influenced by sound waves including a reflective diaphragm subject to vibration by reason of a sound signal from a source such as music and also subject to a light source reflected from the diaphragm to an appropriate screen wherein the light source which may include a laser light is influenced by the vibrations of the diaphragm to create distinctive patterns on the screen responsive to tones and combinations of tones, it being the purpose to produce a light pattern wherein the dominant spatial frequencies correspond to the dominant sound frequencies as distinguished from color and intensity.

3,590,682

ALBADA VIEWFINDER INCLUDING PRISMATIC REFLECTING MEANS DEFINING AN IMAGE

Carl Ort, Stuttgart-Bad Cannstatt; Kurt Deininger, Stuttgart-Sillenbach, and Alfred Kilgus, Stuttgart-Wangen, all of, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 21, 1967, Ser. No. 647,712
Claims priority, application Germany, July 20, 1966, K59825
Int. Cl. G03b *13/04*
U.S. Cl. 88—1.5 R **1 Claim**



A brilliant reflective reticle frame for limiting the viewing filed in an Albada viewfinder is disclosed, which is defined by a highly reflective surface of a plastic support member.

3,590,683

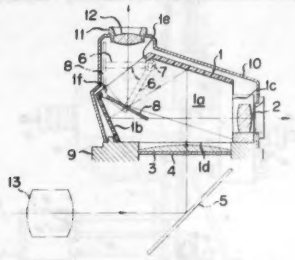
EYE LEVEL AND BREAST LEVEL VIEWING SELECTION FINDER SYSTEM FOR SINGLE LENS REFLEX CAMERA

Kenji Hiruma, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 26, 1969, Ser. No. 827,577
Claims priority, application Japan, May 30, 1968, 36951/43
Int. Cl. G03b *13/00*
U.S. Cl. 88—1.5 **3 Claims**

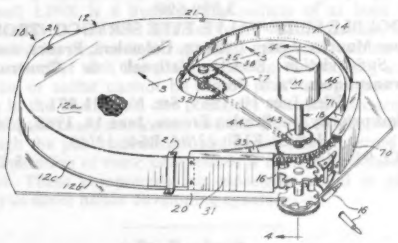
A finder system for single-lens reflex camera which can be arbitrarily switched from an eye-level to a breast-level or vice versa by extending a plane reflecting mirror into or retracting

from the optical path in a pentaroof-type reflecting mirror of a finder optical system. Since the pentaroof-type reflecting mirror is used, said plane mirror for optical path changeover



may be freely moved within the reflecting mirror. The finder of the present invention is more simple in construction and more compact in size as compared with a finder system incorporating a pentaroof-type prism.

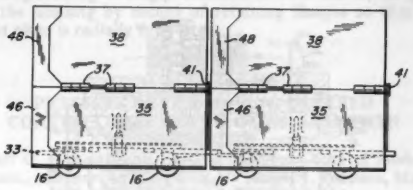
3,590,684
AMMUNITION SUPPLY MEANS
Kenneth J. Gilbert, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Apr. 18, 1969, Ser. No. 817,305
Int. Cl. F41d *9/02*
U.S. Cl. 89—34 **15 Claims**



An ammunition storage and feeding mechanism having a flexible endless metal conveyor belt spiralled into concentric turns about a common axis and disposed within an ammunition box, the inner belt turn being connected to the outer belt turn. The belt having abutments spaced in the lengthwise direction thereof to receive ammunition rounds having their lengthwise axes parallel to the common axis of the belt turns, the belt transferring the rounds to a rapid fire gun feeding mechanism located adjacent the radially outer layer of the belt. The belt is driven by a pair of sprockets respectively driving the inner and outer belt layers at the same speed with the outer empty belt layer portions becoming the radially inner belt layer portions as the belt is driven.

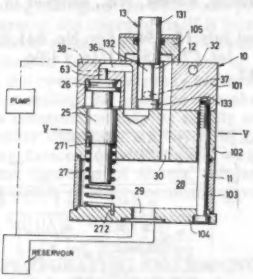
3,590,685
MOBILE REVETMENT
Frank B. Lane, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Feb. 19, 1969, Ser. No. 800,564
Int. Cl. F41h *5/14*
U.S. Cl. 89—36 G **10 Claims**

A mobile revetment of vehicular form. Armor plate is normally stored in a stowed, retracted position on a low slung wheeled frame. Self-contained power means deploys the armor and controls its return to retracted position. The device has connections on its ends so that multiple units may be towed as a train for disposing in protective array. In a



stowed condition units may be stacked one upon another for ease of transportation.

3,590,686
VALVE ASSEMBLIES FOR SEQUENTIALLY ACTUATING FLUID-OPERATED PARTS
Rudolf Bock, 7031 Holzgerlingin, Wuerttemberg, Germany
Filed May 23, 1969, Ser. No. 827,210
Claims priority, application Germany, May 25, 1968, P 17 50 695.5
Int. Cl. F15b *21/00*; F01b *21/00*
U.S. Cl. 91—36 **11 Claims**

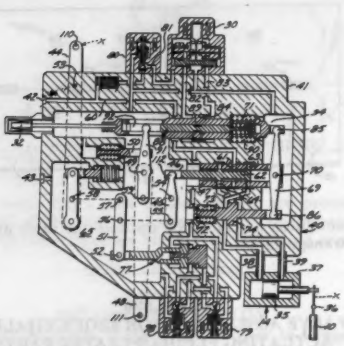


Valve assemblies for sequentially actuating parts which are operated by pressure fluid. The assembly includes a housing which accommodates a plurality of control valves for movement, the several control valves being operatively connected with the several fluid-operated parts for actuating the latter. Each control valve is guided by the housing for movement between a first and a second position and is urged by a spring to the first position. Moreover, each control valve has a differential piston portion which responds to the pressure of the fluid for opposing the spring to displace each control valve from its first to its second position. The housing has a common supply of pressure fluid for all of the control valves and a common low pressure return for all of the fluid-operated devices. The assembly operates to connect the pressure fluid sequentially to the several fluid-operated parts while maintaining those of the latter devices which are not connected with pressure fluid with the common return. Each of the movable control valves moves with a sudden, impact-type of movement from its first to its second position and in both positions influences not only the particular fluid-operated part with which it is connected but also the fluid-operated part connected to the next-following control valve.

3,590,687
SERVOSYSTEM
Alvin L. DuBrown, Corona Del Mar, Calif., assignor to Cadillac Gage Company, Detroit, Mich.
Filed Mar. 28, 1968, Ser. No. 716,900
Int. Cl. F15b *9/10*, *13/16*
U.S. Cl. 91—367 **5 Claims**

The specification describes a servosystem which, in the specific form selected for illustration, comprises a hydraulic

servo for position control of the aileron, spoiler, elevator, rudder or other aircraft control surface. The servo includes a minor feedback loop in which the gain of the primary loop is



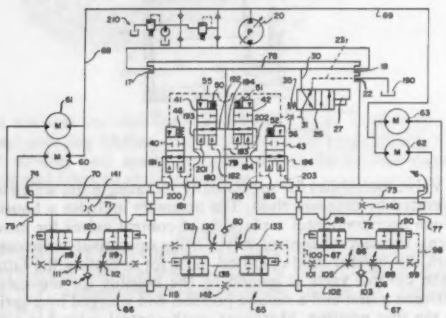
altered inversely to the force opposing change in spoiler or elevator position. The specification also describes a novel and advantageously employed mechanical adder and gain changing mechanism.

3,590,688

INTEGRATED FLOW DIVIDER CIRCUIT

Edward O. Brannon, Racine, Wis., assignor to Rex Chainbelt Inc.

Filed July 15, 1969, Ser. No. 841,924
Int. Cl. F15b *11/16, 13/06*
U.S. Cl. 91—412 **14 Claims**



A flow divider circuit assembly for controlling the supply of fluid to a plurality of motors which drive wheels or the like and wherein the difference in load on the motors is detected and the rates of fluid flow to the motors are suitably varied to maintain uniform rates of rotation of the motors and with provision for independent operation of the motors and wheels associated therewith for turning of a vehicle and in reverse rotation of the motor and wheels, with the flow dividers having spool-type valve members and with variable orifices in circuit with the flow divider valves to minimize changes in pressure differential in response to changes in flow.

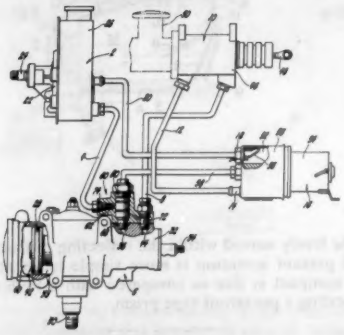
3,590,689

VEHICLE CENTRAL HYDRAULIC SYSTEM

Lee M. Brewer, Saginaw, and William R. Frei, Frankenmuth, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1969, Ser. No. 880,318
Int. Cl. F15b *13/09*
U.S. Cl. 91—412 **6 Claims**

A central hydraulic system combining the hydraulic power steering gear and a hydraulic power brake booster for operation by a common source of pressurized fluid is arranged to have a primary pump supply the inlet of an open center power steering control valve and have the inlet of the power brake booster open center valve draw from the outlet of the steering gear. In the event the steering gear is caused to engage the chassis limit stops and its control valve held fully actuated so that a condition of substantially reduced flow circu-



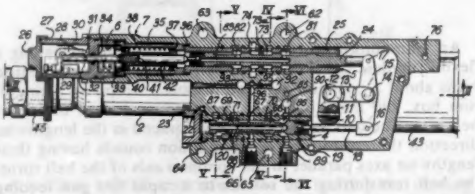
lation is established therethrough, a low flow bypass valve delivers incoming pressure fluid from the pump directly to the power brake booster. A secondary electric motor-driven pump is arranged in the system to operate in the event of failure of the primary pump and directly supplies the power steering gear inlet with the low flow bypass valve again being subject to low flow conditions in the latter to directly supply the power brake booster.

3,590,690

DOUBLE SLIDE-VALVE TYPE SERVOCONTROL

Jacques Maurice Andre Dalbera, Colomiers, France, assignor to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris, France

Filed June 10, 1969, Ser. No. 831,971
Claims priority, application France, June 11, 1968, 154504
Int. Cl. F15b *13/04;* **B64c** *13/40*
U.S. Cl. 91—444 **5 Claims**



The invention relates to a servocontrol comprising two slide-valves connected in series hydraulically and in parallel mechanically by being coupled to a differential control element.

3,590,691

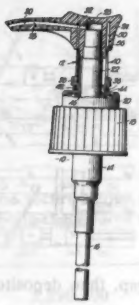
LOCKING CLIP FOR HAND PUMPS

Wallace F. Magers, Leawood, Kans., assignor to Cook Chemical Company, Kansas City, Mo.

Filed June 26, 1969, Ser. No. 836,710
Int. Cl. F15b *15/26;* **B65d** *83/06*
U.S. Cl. 92—23 **8 Claims**

A tubular lock, surrounding the reciprocable plunger of a hand pump, between the liquid discharge head and the plunger guiding collar, holds the plunger extended until

rotated to a position where a slot in the lock clears a rib in the head, whereupon a portion of the lock becomes housed



within a cavity in the head during normal pumping operations.

3,590,692

SILVER HALIDE DEVELOPING AGENTS AND PHOTOGRAPHIC PROCESS

Stanley M. Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 1, 1968, Ser. No. 741,293
Int. Cl. G03c *5/24;5, 5/54*
U.S. Cl. 92—26 **8 Claims**

Photographic process and product employing silver halide developing agents of quaternary ammonium compounds of the formula:

DEV—LINK—QUAT

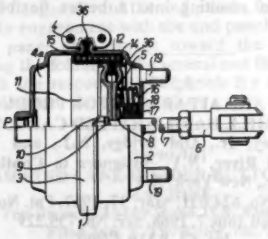
wherein DEV is a dihydroxyaryl silver halide developing radical or a dialkoxyaryl or dialkoxymethoxyaryl precursor thereof; LINK is a hydrocarbon radical of at least 2 and preferably 3 carbon atoms or a hydrocarbon radical preceded by and/or interrupted by individual atoms of oxygen or sulfur with the proviso that an interrupting atom of oxygen or sulfur cannot be closer than two carbon atoms away in the chain from the positively charged nitrogen atom of the quaternary ammonium radical QUAT bonded to LINK through the pentavalent nitrogen atom. The preferred mode of preparation of these compounds is by the alkylation of an amine. These compounds are especially useful in photography as silver halide developing agents.

3,590,693

BRAKE CHAMBER DEVICE FOR AIRBRAKE INSTALLATIONS

Istvan Rasko, Budapest, Hungary, assignor to Jarmufejlesztesi Intezet, Budapest, Hungary

Filed July 7, 1969, Ser. No. 839,578
Claims priority, application Hungary, July 17, 1968, JA-541
Int. Cl. F01b *19/00;* **F16j** *3/00*
U.S. Cl. 92—64 **6 Claims**



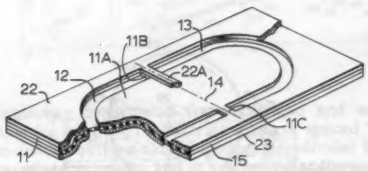
A brake chamber device for airbrake installations, the device having a housing which contains a thrust plate to which is secured a brake actuating rod means and a rolling sealing diaphragm between the thrust plate and the housing which is substantially rigid in the axial direction by means of a solid body being enclosed in the diaphragm, the sealing diaphragm being sealingly attached to both the thrust plate and the housing by means of retaining flanges so that the thrust plate is radially supported.

3,590,694

PRESSURE DEVICE HAVING LAYERED CONSTRUCTION AND PIVOTING SEAL WITH OPERATOR

Robert C. Prescott, and Hoel L. Bowditch, both of Foxboro, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Nov. 1, 1968, Ser. No. 772,787
Int. Cl. F16j *3/00*
U.S. Cl. 92—100 **31 Claims**



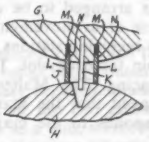
In a multilayer sandwiched-type of construction, an operator activated by at least one pressure chamber is brought through a sealing configuration which also provides for pivoting of the operator; the operator itself is formed from a layer of the sandwiched construction and the sealing at the operator pivot is formed from sealing layers of the sandwiched construction; the operator layer may be backed by a resilient sheet layer for sealing the pressure chamber actuating the operator; this construction may be readily adapted to a plurality of pressure chambers employed in conjunction with motion-sensing devices, or alternatively weight and springs, to perform the functions of alarms, relays, repeaters, amplifiers, and a variety of other pneumatic devices.

3,590,695

SHEET PERFORATING AND JOINING SYSTEM

George Gerard, Point Pleasant, N.J., assignor to Jiffy Manufacturing Co., Hillside, N.J.

Filed Apr. 4, 1968, Ser. No. 718,776
Int. Cl. B31f *1/00;* **B31b** *1/14;* **B26f** *1/20*
U.S. Cl. 93—1.1 **5 Claims**



The disclosure relates to perforating and uniting sheets of materials together and particularly paper sheets so that a substantially firm junction is achieved.

This is done by forcing into the material while it is being held in position an interrupted sawtooth or serrated arrangement which will result in a junction between the fibrous structure of the various superimposed layers.

This is done by passing several layers of the paper material between rollers, one of the rollers having an interrupted perforating member extending longitudinally across the roller but transversely of the direction of movement of the laminations. The perforator is provided on each side with spring

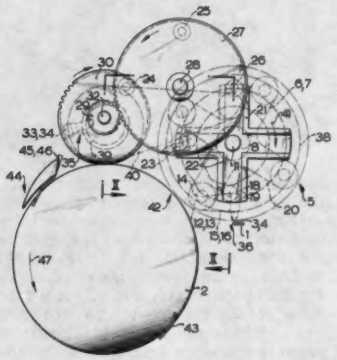
pressed holder members and the meeting roller has a recess extending transversely of the moving laminations but longitudinally of the roller to receive the perforating interrupted sawtooth arrangement.

3,590,696

MACHINE FOR MAKING CARRYING BAGS HAVING U-SHAPED CARRYING HANDLES

Herbert Kurt Reissner, and Friedhelm Brinkmeier, both of Ladbergen, Germany, assignors to Windmoller & Holscher, Lengerich, Germany

Filed Apr. 1, 1969, Ser. No. 812,227
Claims priority, application Germany, May 27, 1968, P 17 61 492.5
Int. Cl. B31b *1/86, 1/14, 1/62*
U.S. Cl. 93—8 **5 Claims**



The machine serves to make carrying bags consisting of paper or plastics material and having carrying handles, which are formed by strips folded into U-shape and adhered to the sidewalls of the bags. Each of the continuously rotating working cylinders used to fold and adhere the carrying handles is preceded by a strip transfer device for transferring the handle blanks which have been supplied in a direction which is parallel to axis of the working cylinder. The strip transfer devices each comprise a rotary transfer tool having a plurality of strip-receiving stations, which have a regular angular spacing. The tool is arranged to be driven by drive means comprising a Maltese cross movement having slots equal in number to the strip-receiving stations and comprising a cam carrying a striker pin for each slot. The striker pins have a regular angular spacing. The Maltese cross movement is driven at such a speed that the maximum velocity of the transfer tool corresponds to the maximum velocity of the working cylinder.

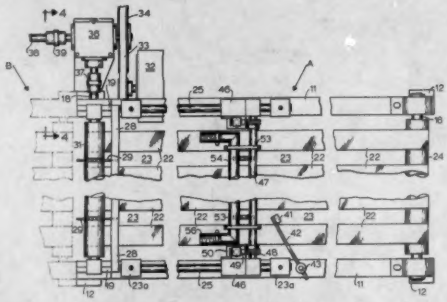
3,590,697

MACHINE FOR FOLDING PLASTIC BAGS

Helmut T. Schaffron, Davis, Calif., assignor to Herman C. Weist, Lousiville, Ky.

Filed Sept. 18, 1969, Ser. No. 859,090
Int. Cl. B31b *1/00*
U.S. Cl. 93—8 **10 Claims**

Plastic bags are folded one or more times longitudinally and then transversely preparatory to packaging. Each bag moves longitudinally on spaced belts and the leading edge is lifted above the belts by suction devices which move from an initial position below the belts to an elevated position. Continued movement causes the bag to be folded in half and the fold is squeezed between rollers, pulling the bag out of the grip of the suction devices and creasing the bag at the fold. The operation may be repeated. Each longitudinally folded bag is fed out onto a table having a transverse gap at its center. Suction devices move up into the gap, engage the bag and pull it down, causing it to be transversely folded as it is



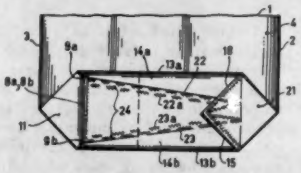
pulled through the gap, then deposited on belts below the table and discharged.

3,590,698

METHOD FOR MANUFACTURING A PLASTIC BLOCK BAG

Jan Roelof Jochem Hendrik DeVries, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin N. V., Zwolle, Netherlands

Filed Oct. 7, 1969, Ser. No. 866,427
Claims priority, application Netherlands, Oct. 10, 1968, Apr. 2, 1969, 6,814,532;6,905,187
Int. Cl. B31b *49/04*
U.S. Cl. 93—35 R **10 Claims**



A bag of thermoplastics material is manufactured from a tubular foil by making one or two incisions from one end of the tubular foil having from the incision end edges partially aslant with respect to the longitudinal edges of the tubular foil.

After unfolding the parts forming the bottom, the bottom flaps are inwards folded about a cross folding line situated between the folding line and the line extending perpendicularly to the longitudinal edges of the tubular foil. The foils are sealed together by applying heat to both sides of the stack of foils to be connected.

If the seals are discontinuous a layer impermeable for solid substances and letting a gas through is provided. From the part forming the valve flap a V formed part may be removed. In order to improve the closure the part forming the valve flap may be subjected to stretching and/or provided with superficial incision resulting into a better flexibility of the treated part.

3,590,699

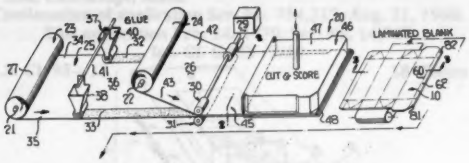
METHOD AND APPARATUS FOR PRODUCING FACSIMILE HAND-WRAPPED CARTONS

Francis H. Foley, Jr., Old Bridge, N.J., and Vincent A. Adams, Pearl River, N.Y., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 624,031, Mar. 17, 1967, Pat. No. 3,499,598.
Filed June 7, 1968, Ser. No. 735,229
Int. Cl. B31b *17/00*
U.S. Cl. 93—36.6 **10 Claims**

A method of producing hand-wrapped appearing cartons by feeding a pair of webs along a path in a predetermined

direction, securing only longitudinal edge portions of the webs to each other, forming the webs in blanks, feeding the



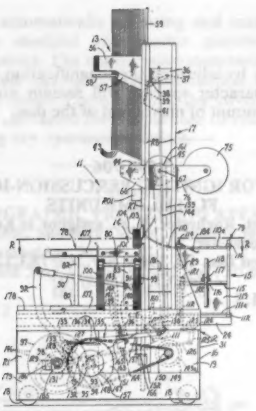
blanks with one of the secured edge portions leading, and folding the blanks to bring the secured edge portions into adhesive contact.

3,590,700

METHOD AND MACHINE FOR FORMING CONTAINERS

Gerald C. Paxton, Sanger, and Allen D. Paxton, Fresno, both of, Calif., assignors to General Nailing Machine Corporation

Filed Sept. 5, 1968, Ser. No. 757,581
Int. Cl. B31b *17/00*
U.S. Cl. 93—55 **23 Claims**



A method and machine for forming a container from a pair of preformed end panels and a preformed body mat of generally planar form having a central bottom panel and side panels joined thereto with scored fold lines, the mat panels having flanges at the ends thereof. The method and operation of the machine sequentially involve feeding a vertically disposed body mat downwardly and simultaneously applying glue to the end flanges, feeding a spaced pair of vertically disposed end panels into engagement with the bottom panel of the mat, inwardly of the end flanges thereof, moving the mat substantially horizontally, partially folding the bottom panel end flanges toward the end panels, folding the mat side panels into engagement with the end panels, partially folding the side panel end flanges toward the end panels, and completing the folding of the several end flanges into engagement with the respective end panels for adhesively joining the end flanges to the end panels.

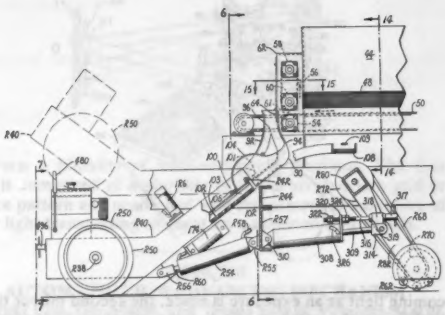
3,590,701

AUTOMATED LANE-DIVIDER BUTTON APPLYING MACHINE

Terry K. Ten Broeck, 33449 Road 168, Visalia, Calif.

Filed Jan. 5, 1970, Ser. No. 739
Int. Cl. E01c *23/16*
U.S. Cl. 94—39 **38 Claims**

An automated lane-divider button applying machine particularly suited for use in applying lane-divider buttons, frequently called "Bott's Dots," at selected intervals along lane-divider lines of surfaced highways, characterized by a self-propelled, steerable vehicle having mounted therein for automated operation a mechanism including a surfacing brush, adhesive mixer and applicator and a button ejector



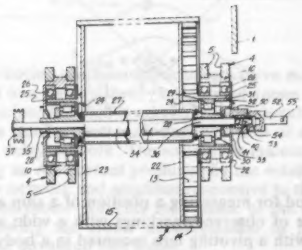
and applicator interrelated for automated and sequential operation for applying reoccurring series or spaced "strings" of lane-divider buttons along highway lane-divider lines in a predetermined sequence and at predetermined spaced intervals.

3,590,702

VIBRATORY ROLLER

Peppino Sechi, 5669 Upper Lachine Road, Montreal, Quebec, Canada

Filed Apr. 23, 1969, Ser. No. 818,688
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 **5 Claims**



A vibratory roller machine in which the means for imparting vibrations to the roller body consist of two mutually angularly adjustable rotary eccentric masses, so as to vary the resultant eccentricity of the two masses, and of means to rotate the two masses as a unit, whereby amplitude of vibration can be varied for the same vibration frequency, thereby obtaining improved and faster compaction of asphalt, gravel and the like.

3,590,703

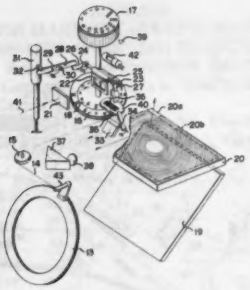
SET VALUE INDICATING APPARATUS FOR SINGLE LENS REFLEX CAMERA

Shigeo Ono, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Toyko, Japan

Filed Apr. 19, 1968, Ser. No. 722,799
Claims priority, application Japan, Apr. 24, 1967, 42/25,809
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **5 Claims**

A view finder for a single lens reflex camera is provided in which the exposure data such as shutter speed, lens aperture, distance and the like may be observed; provisions being made to record the data on the photograph. An aperture or window is provided in the camera body for illuminating the data dials. Two pivotable mirrors, a prism and a lens are pro-

vided to project an image of the dial data on the border portion of the focusing plate. Both pivotable mirrors are coupled to the shutter release button, the first mirror blocking the incoming light as an exposure is made, the second mirror tilting slightly at the same time. A lamp synchronized with the shutter release button flashing to provide the required light for recording data on the film by the tilted second mirror.



3,590,704

METHOD FOR MEASURING A POSITION OF A SHIP AT SEA

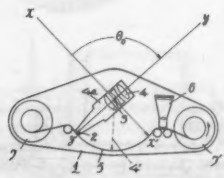
Hidetomo Endo, 13-11, Minami-Oi-machi 6 chome, Shinagawa-ku, Tokyo, Japan

Filed June 19, 1968, Ser. No. 741,153

Claims priority, application Japan, June 20, 1967, Sept. 6, 1967, 42/39,016;42/56,759

Int. Cl. G01c *3/00*

U.S. Cl. 95—1 **1 Claim**



A method for measuring a position of a ship at sea by taking picture of observed markings with a wide angle camera provided with a pivoting lens mounted in a bodytube formed with a slit at its forward end and pivoted at the center of the lens and angularly analyzing images of the observed markings formed on the exposed film, so that the position at which the exposure is made and/or the positions at which the observed markings are located can be quickly and accurately calculated and measured.

3,590,705

PHOTOGRAPHIC-TYPE COMPOSING APPARATUS

Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla.

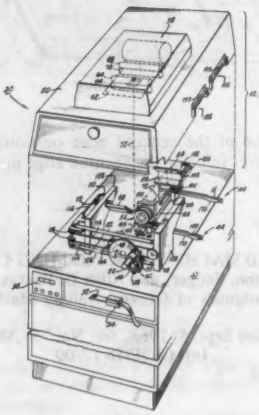
Filed Dec. 13, 1967, Ser. No. 690,720

Claims priority, application Great Britain, June 10, 1966, 25997/66

Int. Cl. B41b *17/10*

U.S. Cl. 95—4.5 **26 Claims**

Photographic-type composing apparatus in which transparent characters are carried on a continuously revolving disc. A shutter and a flashlamp are mounted translate with the disc. As each selected character moves past a projection window in the shutter, it is illuminated with a short, intense flash of light from the flashlamp. The character image is projected through an optical system onto photographic film. After the projection of each character, the disc, the shutter and the flashlamp are moved as a unit in a direction parallel to the line of characters being composed by a distance equal to the relative width of the character next to be projected. During this movement, the optical system and the film remain stationary. The point size of images on the film is changed simply by adjusting the magnification of the optical system; the character spacing will remain correct without changing the amount of movement of the disc.



3,590,706

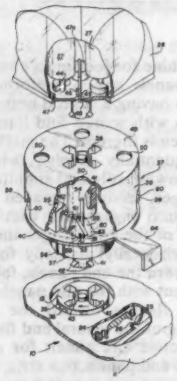
ADAPTER FOR IGNITING PERCUSSION-IGNITABLE FLASHLAMP UNITS

Marcus J. Millet, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 12, 1968, Ser. No. 783,227

Int. Cl. G03b *9/70*

U.S. Cl. 95—11.5 **22 Claims**



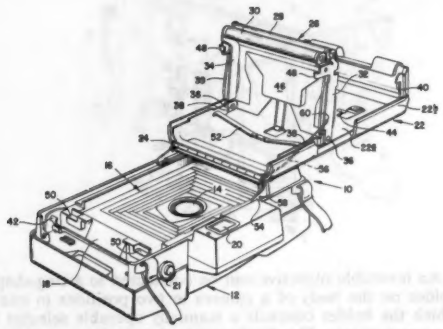
An adapter is provided to enable use of percussion-ignitable flashlamp units with photographic apparatus designed for use with electrically ignitable flashlamp units. A camming member movable in response to rotation of a flash cube socket on the photographic apparatus cocks a spring loaded actuating member and a solenoid controls movement of the actuating member to fire a received percussive lamp.

3,590,707

SELF-ERECTING COMPRESSIVE MEMBERS IN A CAMERA

David S. Merz, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of application Ser. No. 754,217, Aug. 21, 1968. This application Feb. 24, 1970, Ser. No. 14,740
Int. Cl. G03b 17/50
U.S. Cl. 95—13 18 Claims



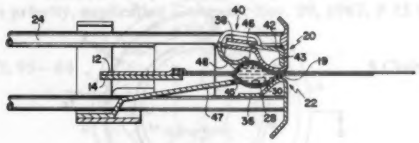
Apparatus automatically elevating and making accessible the normally shielded compressive members of a self-developing camera. The compressive members are carried by supporting arms having pivotal connection with the inner portion of the cover. Upon opening the cover, the compressive members are raised for the purpose of routine inspection and remedying any operational defect.

3,590,708

PHOTOGRAPHIC PROCESSING APPARATUS

Patrick L. Finelli, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 17, 1968, Ser. No. 730,000
Int. Cl. G03b 17/50
U.S. Cl. 95—13 11 Claims



A photographic apparatus for spreading a processing fluid in a layer between two sheets of material including a pair of spreader members defining a pressure generating gap through which the sheet materials are movable. A plastic member is mounted on one of the spreader members and adapted to exert a resilient force against one such sheet of material in advance of the gap to present a weir to the flow of the processing fluid between the sheets in the direction away from the gap.

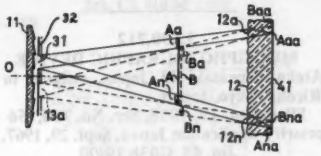
3,590,709

MULTIPHOTOGRAPHING DEVICE

Nobunao Mikami, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Sept. 5, 1968, Ser. No. 757,592
Claims priority, application Japan, Sept. 11, 1967, 58221/67
Int. Cl. G03b 35/08
U.S. Cl. 95—18 7 Claims

A first lens forms an image of an object at its object plane by focusing light through an aperture in a movable shield adjacent the first lens. The image is used as an object by a second lens which is comprised of an array of microlenses. The second lens focuses portions of the image upon a sensitive material at a plurality of sites which vary depending upon the placement of the aperture, which is movable between a plurality of nonoverlapping positions. The first lens is comprised of a plurality of lenses arrayed in a grid or lattice pattern and positioned with the centers of curvature of their light-transmitting surfaces on a common optical axis.

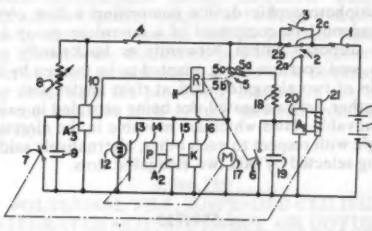


3,590,710

AUTOMATIC FILM ADVANCING MECHANISM

Naoyuki Uno, Ooi-Machi, and Tetsuo Sasaki, Fukuoka-Machi, both of, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 10, 1968, Ser. No. 720,192
Claims priority, application Japan, Apr. 27, 1967, 42/27125
Int. Cl. G03b 1/12, 9/64
U.S. Cl. 95—31 E 16 Claims



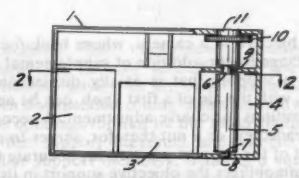
A film advancing mechanism includes a drive motor which is connected to a battery through a normally open switch actuated by a solenoid which is energized an adjustable interval following the camera shutter closing by means of an adjustable RC time delay network. The solenoid is maintained energized only by an AC current produced by the rotating motor. An RC delay network and amplifier responsive to the deenergization of the motor prevents the release of the shutter an interval following the motor deenergization to permit the relaxing of the advanced film frame.

3,590,711

FILM ADVANCEMENT CONTROL APPARATUS FOR CAMERAS

Vincenzo Milanese, and Angelo Bianchi, both of Ceva Cuneo, Italy, assignors to Ferrania S.p.A. Corso Matteotti, Milan, Italy

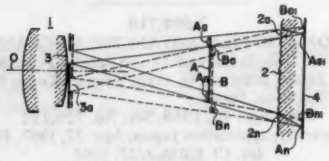
Filed June 7, 1968, Ser. No. 735,314
Claims priority, application Italy, June 10, 1967, 37,398
Int. Cl. G03b 1/62, 1/66
U.S. Cl. 95—31 6 Claims



An apparatus for controlling film advancement in inexpensive cameras is shown which comprises a takeup roll which

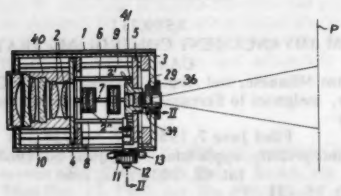
cooperates with an exposure count scale to indicate the number of frames which have been advanced through the camera, and a film-metering device having a spiral track with detent seats therein and means for registering with the detent seats to interrupt travel of film through the camera at one-frame intervals.

3,590,712
MULTIPHOTOGRAPHIC DEVICE
Hisanori Ataka, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 19, 1968, Ser. No. 760,756
Claims priority, application Japan, Sept. 29, 1967, 42/62807
Int. Cl. G03b *19/00*
U.S. Cl. 95—36 **5 Claims**



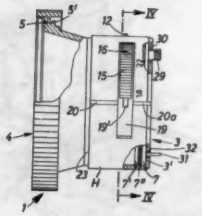
A multiphotographic device comprising a first objective lens, a second lens comprised of a microlens group and an aperture disposed within, forwardly or backwardly of said first lens; said aperture being adapted to be formed by the intersection of two elongated slots at right angles with respect to each other, said elongated slot being provided in each of a pair of movable plates which are movable in the directions at right angle with respect to each other, alternatively said aperture being selected by said two elongated slots.

3,590,713
ADJUSTABLE SEATING FOR OPTICAL COMPONENTS
Lothar Kirstein, Bad Kreuznach, and Gerd Kurz, Biebelsheim, both of, Germany, assignors to Jos. Schneider & Co., Bad Kreuznach, Germany
Filed May 5, 1969, Ser. No. 821,706
Claims priority, application Germany, May 4, 1968, P 12 85 287.8
Int. Cl. G03b *3/00*
U.S. Cl. 95—45 **10 Claims**



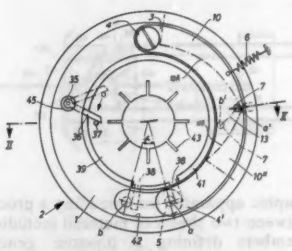
An optical objective in a camera, whose back-focal length is subject to change by the addition of supplemental lenses, is provided with a support that is axially displaceable along guide rails and, with the aid of a first knob, can be arrested in several axial positions for coarse adjustment. A second knob, controlling a leadscrew or a nut therefor, serves to carry out fine adjustment of the support position for accurate focusing. A third knob immobilizes the objective support in its selected position of fine adjustment. The three knobs, or at least two of them, are mounted on a common axis transverse to the guide rails.

3,590,714
PHOTOGRAPHIC APPARATUS WITH TWO-WAY OBJECTIVE
Artur Schops, Munich, Germany, assignor to Steinheil-Lear Siegler AG, Munich, Germany
Filed Sept. 24, 1969, Ser. No. 860,682
Claims priority, application Germany, Sept. 28, 1968, G 67 53 832.3
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 **10 Claims**



An invertible objective can be connected to a ring-shaped holder on the body of a camera in two positions in one of which the holder conceals a manually operable selector for the aperture size. The diaphragm in the objective is closed in automatic response to attachment of the objective in the one position and the diaphragm is then coupled to the automatic exposure control in the camera body. When the objective is attached in the other position, the selector is accessible so that the desired aperture size can be set by hand.

3,590,715
ADAPTER AND OBJECTIVE FOR USE IN PHOTOGRAPHIC APPARATUS
Artur Schops, Munich, Germany, assignor to Steinheil-Lear Siegler AG, Munich, Germany
Filed Sept. 29, 1969, Ser. No. 861,828
Claims priority, application Germany, Sept. 28, 1968, P 17 97 448.0
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **13 Claims**

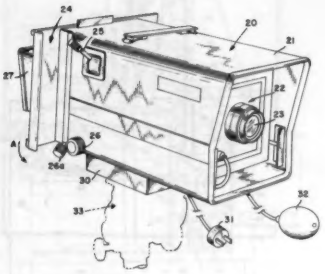


An objective wherein the diaphragm can be preset by a lever mounted on its barrel and can be cocked by a diaphragm cocking device in a camera with an exposure control. The objective can be coupled to several types of cameras by means of adapters provided with at least one cam serving to transmit motion to the lever in such a way that the lever moves in a single direction irrespective of the direction of movement of the cam. The cam can be moved by a manually operated ring which is turnable on the adapter with reference to a fixed diaphragm scale. The cam compensates for eventual differences between such angular movements of the ring which are needed to move the ring between successive positions indicating different *f*/stops and corresponding angular movements of the lever in order to change the aperture size by full *f*/stops. According to the particular type of the camera and its exposure control, the ring is turnable in clockwise or in counterclockwise. A pin or the like on the ring is in engagement with the exposure control.

3,590,716
SHUTTER CONTROL ARRANGEMENT

James S. Beattie, 2810 Lansdowne Road, Victoria, British Columbia, Canada

Filed June 10, 1968, Ser. No. 735,597
Int. Cl. G03b 9/00
U.S. Cl. 95—53 6 Claims

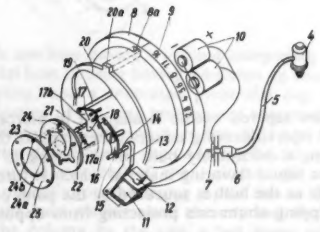


An electrically controlled arrangement for a camera to position the shutter of the camera, wherein a switching device of an electrical control circuit is responsive to the positioning of a ground glass plate and film carrying structure, which are insertable in the rear portion of the camera, and wherein the structure activates the switching device to energize or deenergize a solenoid linked to the shutter for opening and closing the shutter in a predetermined sequence dependent upon the position of the switch activating structure.

3,590,717
DIAPHRAGM-PRESELECTOR MECHANISM FOR CAMERAS WITH DETACHABLE OBJECTIVES

Karl-Heinz Raab, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke Kreuznach, Bad Kreuznach Rhld, Germany

Filed Nov. 21, 1968, Ser. No. 777,706
Claims priority, application Germany, Nov. 29, 1967, P 15 97 419.3
Int. Cl. G03b 9/07
U.S. Cl. 95—64 5 Claims

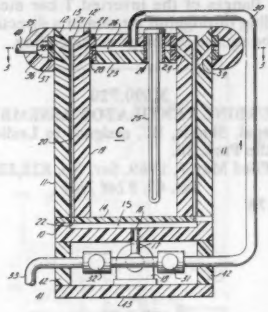


A diaphragm-control member on a detachable camera objective is actuated by the closure of a switch upon depression of a shutter-trip button on the camera, this switch energizing an electromagnet on the objective which moves the control member—specifically a bellcrank lever—into contact with an adjustable abutment to establish a preselected diaphragm aperture.

3,590,718
PHOTOGRAPHIC FILM AND PAPER PROCESSING APPARATUS

Samuel Needleman, 177 Louis St., Maywood, N.J.

Continuation-in-part of application Ser. No. 751,861, Aug. 12, 1968. This application Jan. 29, 1970, Ser. No. 6,713
Int. Cl. G03d 3/00
U.S. Cl. 95—89 5 Claims

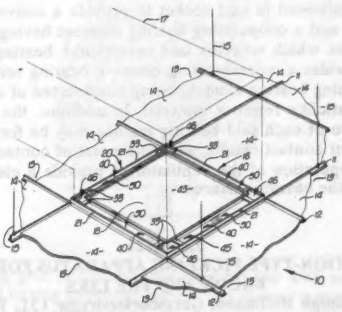


An apparatus for processing photographic sheet material is described. The apparatus comprises an upright vessel of cylindrical configuration having concentric walls which define a narrow chamber adapted to be filled with processing solution in which the material may be inserted. Radially extending channels are distributed in a circular pattern below the solution level, terminating in a nozzle for directing an impacting streams of the processing solution in the chamber against the emulsion side of the material, resulting in a laminar flow.

3,590,719
POLYGONAL TILE, SUSPENDED CEILING INTEGRATED ACOUSTIPLAQUE AIR DIFFUSER ASSEMBLY

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Covina, Calif.

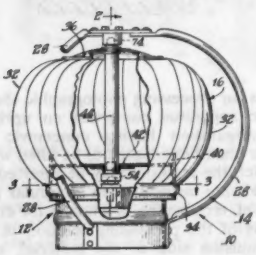
Filed Sept. 26, 1969, Ser. No. 861,296
Int. Cl. F24f 7/00
U.S. Cl. 98—40 D 12 Claims



A polygonal tile suspended ceiling integrated acoustiplaque air diffuser assembly for use with an air plenum chamber having an air outlet mounted thereon and for use with a suspended ceiling with a plurality of tile receiving square openings formed by the lower flanges of main inverted T-bar support members and intersecting cross-inverted T-bar support members, includes a square enclosing outer frame for insertion into one of the square ceiling openings; a smaller square enclosing inner frame with a square-shaped central opening; spacers for mounting the inner member within the outer frame in spaced relationship;

a plaque of ceiling tile inserted into the central opening to block the passage of air from the air outlet thereover through the central opening; corner plates inserted between the inner and outer frame at the corners thereof to block the passage of air from the air outlet through the corner spaces; and nested channels inserted into peripheral passages between the inner and outer frames forming restricted passage for selectively controlling the air passing therethrough from the air outlet, with the air flowing therethrough being deflected by the lower flanges of the inverted T-bar members to flow along the ceiling throughout a room in a direction away from the sides of the square openings in the ceiling.

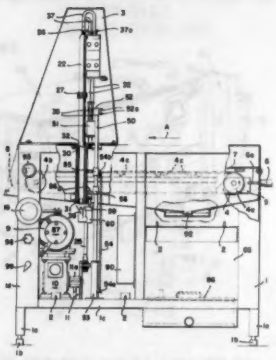
3,590,720
TURBINE VENTILATOR ASSEMBLY
Burton L. Siegal, Skokie, Ill., assignor to Leslie Welding Co. Inc., Franklin Park, Ill.
Filed May 7, 1969, Ser. No. 822,528
Int. Cl. F24f 7/02
U.S. Cl. 98—75 **8 Claims**



A turbine ventilator of the type designed to be affixed to ventilator or exhaust stacks. Said ventilator comprises a turbine head, and support means mounting said head for rotative movement relative thereto. The journaling of said turbine head to the support means is provided by upper and lower bearing arrangements. At least one said bearing arrangement comprises an elastomeric seat member having a socket formed therein, a ceramiclike spherical bearing element positioned in said socket to provide a convex bearing surface, and a cooperating bearing element having a spherical recess which receives said ceramiclike bearing element and provides a corresponding concave bearing surface, said cooperating bearing element being constructed of a low friction plasticlike resinous material. In addition, the radius of curvature of each said bearing surface may be formed such that point contact results, with said point of contact orbiting during operation of the ventilator to provide a cleaning action for the bearing surfaces.

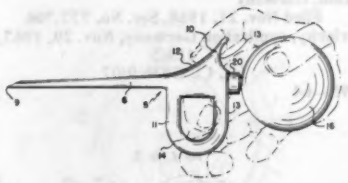
3,590,721
INJECTION-TYPE PICKLING APPARATUS FOR HAMS, BACON AND THE LIKE
Louis Adolph Hoffmann, Gerasdorferstrasse 131, Wien XXI, Austria
Filed Aug. 12, 1969, Ser. No. 849,468
Int. Cl. A23b 1/16
U.S. Cl. 99—256 **14 Claims**

A pickling apparatus has a transport mechanism for moving an article of food along a horizontal path. Arranged above this path is an array of needles which are displaceable into and out of penetrating engagement with the article while being connected to a source of pickling liquid under pressure. A holding element is coupled to these needles to be displaceable into and out of abutment with the article to hold it down and to enable withdrawal of the needles. A common drive mechanism is provided for jointly displacing the needles and the holding element while enabling displacement of the needle carrier downwardly relative to the retaining element. A valve mounted on the needle carrier is actuatable to



feed liquid from the source to the needles only when the retaining element is immobilized and relative displacement of needles and retaining element occurs.

3,590,722
FLAVOR INJECTOR DEVICE
Samuel Leptrone, 1737 Robinhood Lane, Clearwater, Fla.
Filed June 9, 1969, Ser. No. 831,290
Int. Cl. A23b 1/16
U.S. Cl. 99—257 **1 Claim**

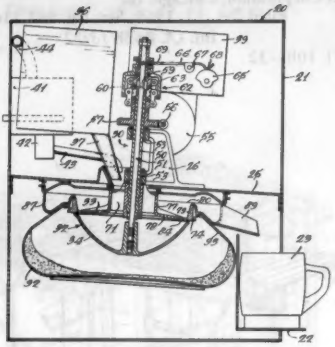


A hollow tapered needle is adapted to pierce a body of food and inject flavoring material thereinto as the needle is withdrawn, a deformably bulb on the stock to the needle contains a liquid flavoring material which is forced through the needle as the bulb is squeezed by the palm of a person's hand, gripping abutments projecting from opposite sides of the stock.

3,590,723
COFFEE MAKER
Sophocles J. Dokos, Oak Park; Joseph L. Vieceli, LaGrange, and Moises B. Lorenzana, Glen Ellyn, all of, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Aug. 14, 1968, Ser. No. 752,684
Int. Cl. A47j 31/00
U.S. Cl. 99—289 **1 Claim**

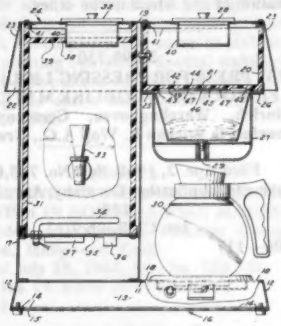
A coffee maker having a brewing chamber with an upper and lower portion and including means for feeding a charge of heated water and coffee grounds therein plus means for

rotating the chamber until nearly all of the coffee liquid is removed therefrom. After the coffee liquid is forced from the



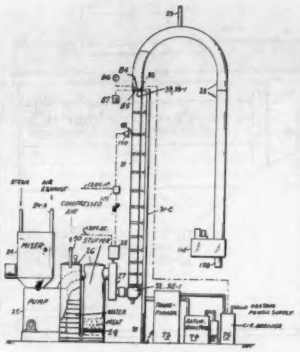
chamber, the upper and lower portions thereof separate to discharge relatively dry leached coffee grounds.

3,590,724
HOT DRINK MACHINE
Walter R. Lorang, 23309 West Maple Road, Walled Lake, Mich.
Filed Mar. 16, 1970, Ser. No. 19,921
Int. Cl. A47j *31/10*
U.S. Cl. 99—290 **10 Claims**



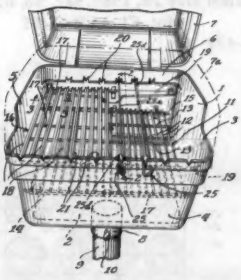
A hot drink machine having a cabinet comprising a truncated pyramidal base housing having a column on one end of the base housing, and a truncated pyramidal cap on the column; the portion of the base housing not occupied by the column constituting a platform; a coffee drip pot on said column over the platform; said cap covering the drip pot and covering about 25 percent of the column; the cabinet presenting an optically foreshortening aspect due to the conformation of the base platform and the cap and the partial coverage of the column by the cap; a hot water reservoir tank in the column primarily heated by a heavy duty immersion heater and having auxiliary light duty standby heater and a thermostat controlling the immersion heater on the outside of a metal bottom wall in the tank; a capillary action water dispersal plate and chamber on the drip pot and a brew can below the drip pot; a user filling the tank through an opening in the cabinet top; a faucet on the tank for drawing hot water; a user filling the drip pot through an opening in the cabinet above the drip pot; and condenser flanges and cup provided over the tank and drip pot to reduce vapor to liquid to prevent dripping outside the cabinet by returning the liquid to the tank or drip pot.

3,590,725
CONTINUOUS ELECTRIC ROASTING OF ELONGATED MEAT STRANDS AND OTHER FOOD STRANDS AND FOOD ROASTING SYSTEMS THEREFOR
Roman Bilynsky, 522 East 5th St., New York, N.Y.
Filed July 17, 1968, Ser. No. 745,525
Int. Cl. A47j *27/00*
U.S. Cl. 99—334 **8 Claims**



A method for the continuous electric roasting of an elongated meat strand in a uniform manner which includes an oven system having means for passing electric current axially and partly transversely through successive sections of the meat strand while it is being advanced. The continuous meat strand may typically have a diameter in excess of 3 inches.

3,590,726
COOKING-GRILL CONSTRUCTION (SKEWER ARRANGEMENT)
James T. Warner, Richardson, Tex., assignor to Interlake Steel Corporation, Chicago, Ill.
Filed Mar. 6, 1969, Ser. No. 804,855
Int. Cl. A47j *37/04*
U.S. Cl. 99—339 **1 Claim**

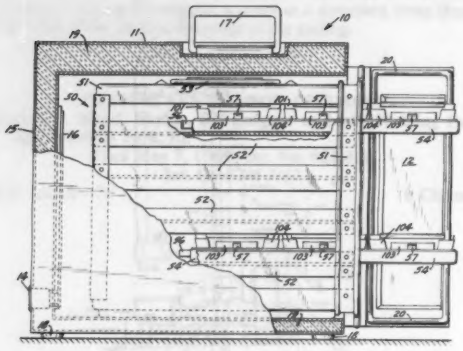


A cooking grill of the outdoor type for use with solid or gaseous fuel having improved skewer and skewer means. The supports for the skewers are an integral part of the grill receptacle. The skewers are provided with collar means for preventing accidental displacement of the skewers when they are positioned in their supports.

3,590,727
RECONSTITUTED FOOD DEVICE AND SYSTEM
Thomas S. Shevlin, Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 20, 1968, Ser. No. 738,431
Int. Cl. A23l *3/00*
U.S. Cl. 99—359 **2 Claims**

A device and system especially useful for reconstituting foods from a frozen state to an edible state in a period of

about 15 minutes is disclosed. The system incorporates a unitized food preparation device comprising an outer thermally insulated shell provided with electrical connection means, an array of shelves having electrical connecting means for mating engagement with the electrical connection means of the shell and with the electrical connecting means



of a plurality of individual meal-sized serving casseroles provided with integral, i.e., sandwiched, embedded or bonded, resistance heating elements. In utilizing the device, meal-sized portions of food are packed in each casserole, in which the food is then precooked and/or frozen for storage and distribution. In the reconstitution process, the food is heated or cooked by the integral heating elements of the individual casseroles.

3,590,728

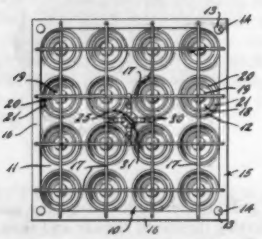
CONE PAN OR MOLD

Mary E. Stanley, P.O. Box 175, Rockingham, N.C.

Filed May 28, 1969, Ser. No. 828,548

Int. Cl. A47j *43/18*

U.S. Cl. 99—439 **4 Claims**



A pan or mold for use in the production of baked cones capable of being used for holding other foods such as ground meat or the like and which pan or mold includes complementary conical mold members with receiving and received aligning portions with the spaces between the larger ends of the cones open to allow substantially unobstructed spaces between the larger extremities for the maximum expansion of the dough and the provision of irregular upper end walls on the cone.

3,590,729

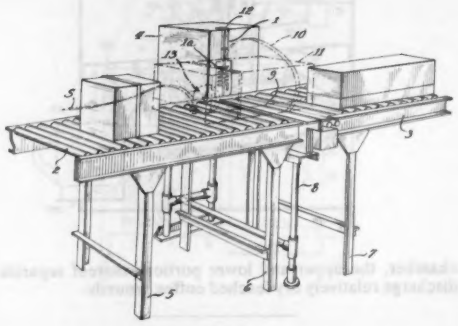
STRAP FEED DEVICE

Robert F. Plattner, Chicago Heights, Ill., assignor to Interlake Steel Corporation, Chicago, Ill.

Filed Dec. 11, 1969, Ser. No. 884,216

Int. Cl. B65b *13/22*

U.S. Cl. 100—32 **7 Claims**



A strap tensioning means in a strapping machine employing a rotary feed wheel and an idler wheel between which strap is fed. The periphery of one of the wheels is covered with a resilient high friction surface for minimizing strap slippage and the two wheels are geared together to eliminate relative rotation of one wheel to the other.

3,590,730

SCREW PRESS FOR PRESSING LIQUID OUT OF FIBROUS OR WOODLIKE MATERIAL

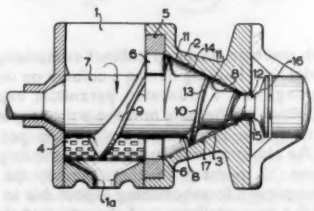
Kurt Heinrich, Wevelinghoven, Germany, assignor to Maschinenfabrik Buckau R. Wolf A.G., Grevenbroich, Germany

Filed Apr. 2, 1968, Ser. No. 745,055

Claims priority, application Germany, Apr. 3, 1967, M73-449

Int. Cl. B30b *9/12*

U.S. Cl. 100—117 **13 Claims**

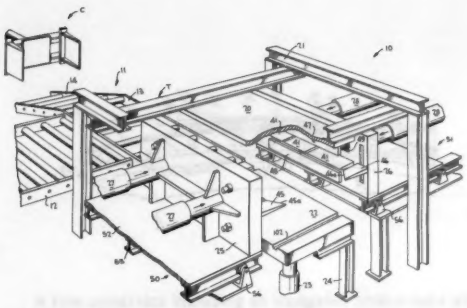


A tapering screw press for pressing liquid out of fibrous or woodlike material, such as particulated sugarcane and the like, in which the material is subjected between a frustoconical surface of the press housing and a frustoconical worm screw of the press to rapidly increasing pressure as the material is forced from the large to the small diameter end of the screw, while the pressed out liquid flows in reverse direction, and in which the screw and the inner frustoconical surface are constructed to substantially prevent rotation of the material with the screw.

3,590,731
COTTON BALE HANDLING AND COMPRESSING SYSTEM

Henry L. Nichols, P.O. Box 667, Little Rock, Ark.

Filed June 3, 1968, Ser. No. 734,057
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 5 Claims

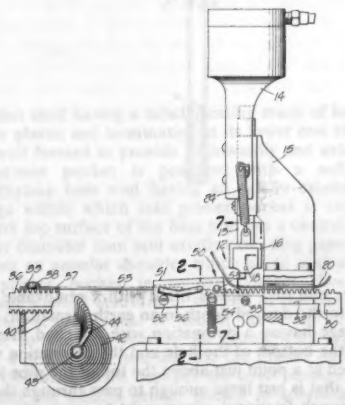


A system is provided for automatically handling and compressing bales in which an extensible clamp is operative to transfer the bale into and out of the compressor through a single end thereof; the bale being removed from the transfer station by additional movement of the clamp away from the compressor. Blade members are provided on the side platens of the compressor to tuck the holding bands into the interior as slack is formed during the compressing operation. Additional blade segments are utilized to tuck the wrapper at the ends of the bale; both the blade members and segments being mounted for movement to accommodate for the reduction in girth in the bale as it is compressed. Spring-biased stripper plates for the blade members and segments are provided on the side platens, which plates also serve to stabilize the bale during the compressing operation. Special stabilized carriage mounting for the side platens and fluid circuitry for automatically sequencing the entire bale handling and compressing operation are provided.

3,590,732
WORK-SUPPORTING MEANS AND TYPE-BAR-SETTING MECHANISM IN HOT-STAMPING MACHINES

Lewis A. Kingsley, c/o Kingsley Machine Company, 850 Cohuenga Blvd., Hollywood, Calif.

Filed July 18, 1968, Ser. No. 745,731
Int. Cl. B44b *5/00*; B41f *1/02*
U.S. Cl. 101—21 8 Claims

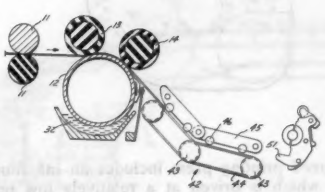


A type-setting mechanism for a hot-stamping machine or the like in which the type is permanently formed on elongated bars which are moved to locate the desired symbols into the printing position. Each elongated bar contains each symbol to be used and sufficient bars are provided to permit the printing of a word or words having the desired number of characters. Each of the bars is additionally provided with another complete set of symbols which are used to indicate the symbol located in the printing position.

3,590,733
DEVICE FOR APPLYING WETTING SOLUTION TO A LITHOGRAPHIC MASTER SHEET

Harry F. Gammeter, Cleveland Heights, Ohio, assignor to Addressograph-Multigraph Corporation,, Cleveland, Ohio

Division of Ser. No. 568,837, Feb. 29, 1966, Pat. No. 3,420,169.
Filed Sept. 10, 1968, Ser. No. 758,921
1968, Ser. No. 758,921
Int. Cl. B41f *7/24*
U.S. Cl. 101—148 2 Claims

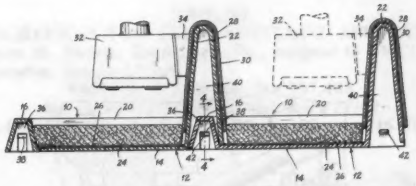


A rotating cylinder with a surface that clings tenaciously to wet duplicating masters. A supply of master wetting fluid is supplied to the cylinder surface. Rubber rollers in contact run at a greater speed to rub as the master is conveyed. A self-honing stripper causes the wet master to separate from the cylinder.

3,590,734
MULTIPLE UNIT STAMP PAD AND SUPPORT

David A. Carter, 1526 Eastham Avenue, St. Louis, Mo.

Filed July 17, 1968, Ser. No. 745,582
Int. Cl. A47f *13/00*; B41k *1/58*
U.S. Cl. 101—333 4 Claims



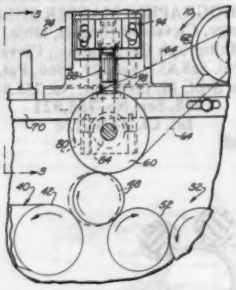
A stamp holder and pad increment for magnetically supporting office stamps, and the like, in position for immediate use adapted for employment as a single unit or in multiples, comprising an elongated pan-shaped base in which is disposed an inking pad, the base including a front wall of inverted V cross section having end wall portions in each of which is an aperture, a rear wall of inverted V cross section of substantially greater height than the front wall having end wall portions each of which includes an interiorly directed boss adapted to be removably engaged in the apertures of the front wall portions, a stamp support of inverted V cross section secured on the rear wall which is of magnetic material adapted to receive a magnetic strip secured to the side of a stamp for support of the latter in selected position above the inking pad in position for pushing downwardly into engagement therewith on selection for use, the bosses being readily snapped into engagement with and freed from the apertures, thereby enabling quick addition or removal of a stamp pad increment.

3,590,735

DUCTOR ROLL ACCELERATING MECHANISM

Ernest H. Treff, Groton, Conn., assignor to Harris Intertype Corporation, Cleveland, Ohio

Filed Aug. 26, 1969, Ser. No. 853,139
Int. Cl. B41f 31/10
U.S. Cl. 101—350 11 Claims



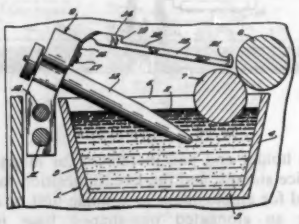
An improved printing press includes an ink fountain or supply roll which is driven at a relatively low peripheral speed and an ink train or receiving roll which is driven at a relatively high peripheral speed by the printing press drive. Ink is transferred between these two rolls by a ductor roll. To tend to minimize rotational shock loading on the printing press drive, the ductor roll is accelerated to the peripheral speed of the ink train roll under the influence of a motor which is independent of the printing press drive before the ductor roll engages the ink train roll.

3,590,736

INK SCRAPER MEMBER MOUNTED ON INK AGITATOR CARRIAGE

Theodore C. Malek, 390 Wego Court, Deerfield, Ill.

Filed Jan. 10, 1969, Ser. No. 790,218
Int. Cl. B41f 31/06
U.S. Cl. 101—363 2 Claims



An ink scraper structure on a printing press for facilitating removal of printing ink from flat-bladed tools used therewith, the scraper member being rigidly secured to a carriage movable along an ink receiving receptacle in which is disposed at least one of a plurality of cooperable rollers, the carriage being movable along the upper edge of the receptacle and having an agitator member extending into ink contained therein with the scraper member being mounted on the agitator carriage and disposed above the agitator carried thereby, the opposite end of the scraper being disposed adjacent to and protected by the inking rollers.

3,590,737

PRINTING MACHINE BELT ASSEMBLY

Edward A. Stroud, Wharton, N.J., assignor to Cameron Machine Company, Dover, N.J.

Filed July 23, 1968, Ser. No. 746,948
Int. Cl. B41f 27/06
U.S. Cl. 101—415.1 5 Claims

A printing machine belt assembly including a unitary clip having hooks integrally joined to an elongated backplate and coextensive therewith to form a pair of locking channels opening toward one another for receiving free ends of a printing belt. The belt is conveniently spliced by inserting preformed end folds of the printing belt in the channels and then sliding the clip across the width of the printing belt to join its free ends.

3,590,738

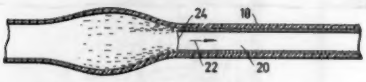
METHOD OF SHOT-HOLE LOADING

Johnston E. Holzman, La Jolla, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 7, 1967, Ser. No. 688,919
Int. Cl. F42c 3/06
U.S. Cl. 102—21 5 Claims

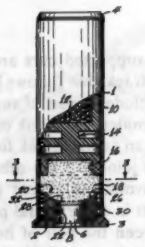
The lower end of a pipe is fitted with a removable cover and driven to the desired depth in an earth formation; an explosive charge having a detonation wire attached thereto is lowered to the bottom of the hole and the detonation wire is then attached at a point just above the top of the pipe to support means that is just large enough to pass through the pipe with just enough frictional engagement to retain the end of the wire above the surface of the ground as the pipe is pulled up over the wire and its support means.

3,590,739
FUSE
Per-Anders Persson, Sodertalje, Sweden, assignor to Nitro-Nobel AB, Gyttorp, Sweden
Filed July 16, 1968, Ser. No. 745,276
Claims priority, application Sweden, July 20, 1967, 10726
Int. Cl. C06c 5/04
U.S. Cl. 102—27 10 Claims



A fuse apparatus including an elongated hollow tube with a reactive substance coating the inner periphery and adapted to support a gaseous percussion wave throughout the length of the tube.

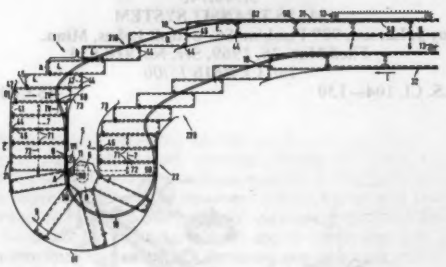
3,590,740
PLASTIC SHOT SHELL AND BASE WAD
George L. Herter, Waseca, Minn., assignor to Herter's, Inc., Waseca, Minn.
Filed Nov. 12, 1968, Ser. No. 774,972
Int. Cl. F42b 7/08, 9/30
U.S. Cl. 102—44 2 Claims



A shot shell having a tubular casing made of hard polycarbonate plastic and terminating at its lower end at an integral base wall formed to provide an inwardly and axially projecting primer pocket is provided with a soft, yieldable polyethylene base wad having an axially extending central passage within which said primer pocket is received. The concave top surface of the base wad has a central aperture of smaller diameter than said axially extending passage, thereby defining an annular shoulder which abuts against the top of said primer pocket in sealing contact therewith. The aforesaid central aperture in the top of the base wad has a diameter at least equal to that of the inside of the primer pocket to thereby provide an unrestricted flash passage above a primer cap inserted into the primer pocket. An annular clearance space between the axial passage in the base wad and the tubular primer pocket in combination with a plurality of longitudinally spaced peripheral teeth on the base wad provide expansion room into which the resilient base wad may be compressed downwardly to provide a cushioning and shock absorbing effect that protects the lower end and base wall of the hard plastic casing from the pressures generated by the exploding propellant charge within the casing.

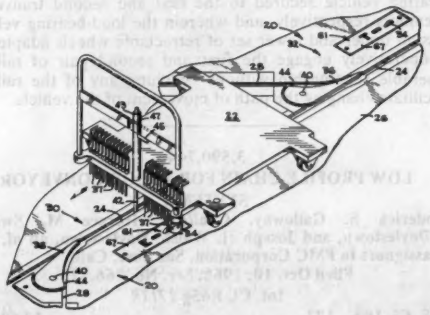
ERRATUM
For Class 103—001 see:
Patent No. 3,591,312

3,590,741
CONVEYORS
Paul Zuppiger, c/o Fort Dunlop Erdinton, Birmingham, 24, England
Filed Feb. 3, 1969, Ser. No. 796,103
Claims priority, application Switzerland, Feb. 2, 1968, 1630/68
Int. Cl. A65g 1/00
U.S. Cl. 104—25 7 Claims



Conveyor having low-speed and high-speed zones, and a connection zone there between, comprising a series of load-carrying platforms slidable one against the next to effect acceleration in the connection zone, wherein each platform is provided with connectors for linking it to the two adjoining platforms in the connection zone, a drive mechanism for the connectors being provided to effect movement thereof relative to their respective platforms, whereby progressive sliding movement of each platform relative to the adjoining platforms in the connection zone is effected, of which the following is a specification.

3,590,742
MECHANICAL TOW TRUCK SWITCHING APPARATUS
Horace M. Swartz, Doylestown, Pa., assignor to FMC Corporation, San Jose, Calif.
Filed Feb. 7, 1969, Ser. No. 797,485
Int. Cl. B61j 3/04; E01b 7/04; B65g 17/42
U.S. Cl. 104—88 16 Claims



A mechanical switching apparatus for use in an automated tow truck system has a switchplate for diverting coded trucks from a main slot in a reference surface to a shunt slot intersecting the main slot. A coded reader head, located upstream

from the switchplate, actuates a cable, operatively connected to the switchplate, to move the switchplate from a closed to an open position. A cam surface on the switch plate closes the switch when the cam surface is contacted by the truck which has been diverted into the shunt slot. Means are provided to prevent an inadvertent triggering of the reader head and other means are provided to prevent an inadvertent opening of the switchplate without a triggering of the reader head. A full spur device prevents the switchplate from diverting more than a predetermined number of trucks into the shunt slot.

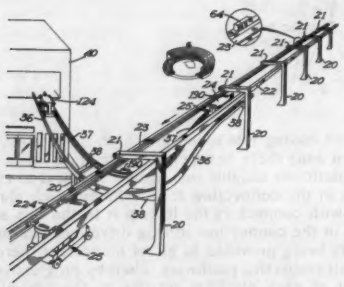
In an alternative double reader head arrangement, simultaneous triggering of two coded reader heads is necessary to open the switchplate. The double reader head apparatus is similar to the single reader head apparatus except that it contains a translator assembly intermediate the reader heads and the switchplate for translating reader head triggering into a switchplate opening only when both of the proper reader heads have been tripped simultaneously.

3,590,743

MASS TRANSIT SYSTEM

Roy J. Larson, 909 Pembina St., Detroit Lakes, Minn.

Filed Mar. 26, 1969, Ser. No. 810,533
Int. Cl. B61b *15/00*
U.S. Cl. 104—130 **15 Claims**



A transportation system is disclosed having a plurality of support columns spatially disposed from each other and anchored to a supporting medium with a plurality of first transverse members, each of which is secured to one of a plurality of support columns and with a plurality of second transverse members secured to certain of the support columns adjacent each other defining a smooth vertical curve varying from the first transverse members and further including a first and second pair of rails adapted to support a load-bearing vehicle secured to the first and second transverse members respectively, and wherein the load-bearing vehicle has an upper and lower set of retractable wheels adapted to cooperatively engage the first and second pair of rails in operable relationship without switching any of the rails to facilitate changing the path of movement of the vehicle.

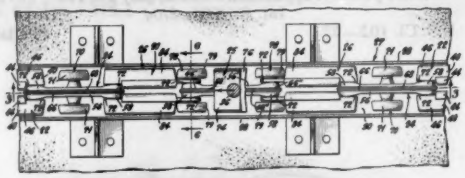
3,590,744

LOW PROFILE CHAIN FOR FLOOR CONVEYOR SYSTEMS

Roderick S. Galloway, Chalfont; Horace M. Swartz, Doylestown, and Joseph H. Walsh, Doylestown, all of, Pa., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 10, 1968, Ser. No. 766,425
Int. Cl. B65g *17/38*
U.S. Cl. 104—172 **13 Claims**

A conveyor chain adapted for use in a floor-mounted chain guide to engage the tow pin of a truck and move the latter. The chain includes a plurality of links and at least one pusher member, the links and the member being interconnected for relative angular and longitudinal movement. Structure is provided on the links presenting a substantially longitudinally continuous pin-supporting surface on the chain to prevent



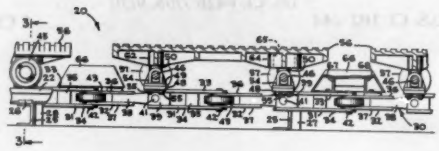
driving engagement between the tow pin and the chain except at the pusher member.

3,590,745

CAR-TYPE CONVEYOR CHAIN

Ralph C. Ouska, Hinsdale, and Frederick L. Smith, Maywood, both of, Ill., assignors to FMC Corporation, San Jose, Calif.

Filed Apr. 2, 1969, Ser. No. 813,813
Int. Cl. B61b *3/00*
U.S. Cl. 104—172 **12 Claims**



A series of roller-supported cars are propelled by a conveyor chain along a track that follows horizontal and vertical curves. The track includes a pair of vertical support rails and a pair of horizontal guides. Each link of the conveyor chain is joined at one end to an adjacent link for pivotal movement in a vertical plane and joined at the other end to an opposite adjacent link for pivotal movement in a horizontal plane. Each joint that pivots in a horizontal plane is supported by a roller traveling between the pair of horizontal guides, while each joint that pivots in a vertical plane is supported by a pair of rollers traveling on the pair of vertical support rails. A top plate is supported by each two pair of rollers on the vertical support rails forming cars for carrying loads and the manner of support does not impart bending stress to the links of the conveyor chain.

3,590,746

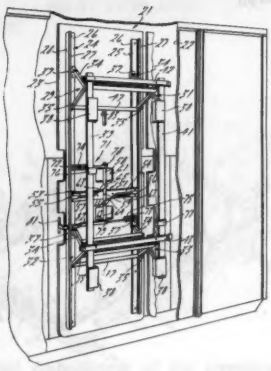
SIDEFILLER ASSEMBLY EMBODYING IMPROVED LATCHING MECHANISM

Ben S. Gibson, Comstock Park, Mich., assignor to Evans Products Company

Filed Aug. 11, 1969, Ser. No. 848,843
Int. Cl. B61d *45/00;* **B60p** *7/14*
U.S. Cl. 105—369 D **9 Claims**

A freight bracing sidefiller assembly adapted to engage and brace freight at spaced distances from a cargo area sidewall. The sidefiller assembly is comprised of a bracing panel that is supported by pairs of scissors type linkage assemblies for movement between a storage position adjacent the sidewall and a plurality of bracing positions spaced from the sidewall. A position locking mechanism is incorporated for locking the

panel in selected ones of the bracing positions and a latching mechanism is provided for assisting in the holding of the



panel in its storage position. Both the position locking and the storage latching mechanisms are operated by a single operating handle.

3,590,747

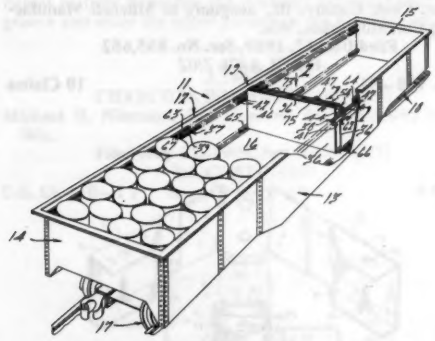
BULKHEAD ASSEMBLY FOR GONDOLA CARS

Gerald L. Solomonson, Detroit, and Douglas W. Day, Livonia, both of, Mich., assignors to Evans Products Company

Filed Mar. 11, 1968, Ser. No. 711,991

Int. Cl. B60p 7/14

U.S. Cl. 105—376 **20 Claims**



A gondola-type railway car and associated bulkhead assembly for bracing freight within the gondola car. The bulkhead assembly is supported for longitudinal movement along the car and carries a locking mechanism for locking the bulkhead assembly in preselected bracing positions longitudinally of the car. The locking mechanism includes an operating handle that is connected to lock pins through an overcenter linkage arrangement so that the lock pins will not become disengaged even if they are subjected to a load in the direction of their released movement. The bulkhead also includes a sprocket wheel and timing shaft arrangement for assisting in its movable support with the locking structure carried by the car assisting with a track structure for precluding accidental disengagement of the sprocket wheels from the track.

3,590,748

MOULDING APPARATUS

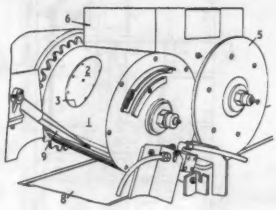
Austin Richard Palmer, Longthorpe, England, assignor to Baker Perkins Incorporated, Saginaw, Mich.

Filed Apr. 15, 1968, Ser. No. 721,394

Claims priority, application Great Britain, Apr. 18, 1967, 17796/67

Int. Cl. A21c 11/00

U.S. Cl. 107—15 **5 Claims**



Apparatus for moulding pie lids and bases comprises a rotary moulding drum with external moulding cavities from which moulded dough pieces are ejected by the application of compressed air internally of the drum, the ejection being assisted by a jet of compressed air directed along the surface of the drum by a fishtail nozzle, and a control system for synchronizing movements of receiving containers with movements of the drum to provide accurate dough depositing.

3,590,749

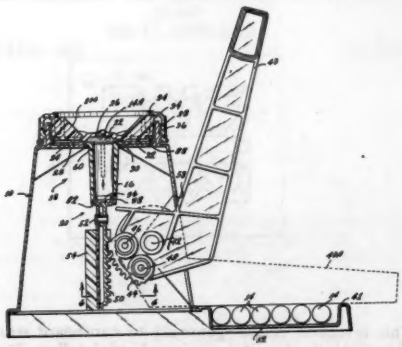
PRESS TOY

Edgar Burns, Los Angeles; Edwin Otto Stastny, Santa Ana, and Homer S. Davis, Los Angeles, all of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 16, 1969, Ser. No. 791,568

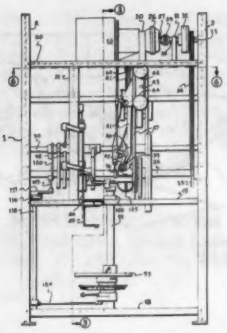
Int. Cl. A47j 43/20

U.S. Cl. 107—15 R **6 Claims**



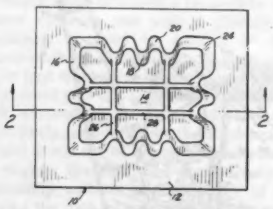
A toy press for molding material such as caramel candy into a predetermined shape comprising a flat plate with an aperture, a cylinder connected to the aperture, and a piston for forcing molding material from the cylinder through the aperture. An interchangeable die which is pressed against the flat plate defines a mold cavity with an outline larger than the aperture in the plate, to permit one-piece dies to be used. The die is transparent or translucent to enable observation of mold filling.

3,590,750
MACHINE FOR MAKING CONSISTENT ICE CREAM CONES
Pierre Lamy, 4000 Gaboury St., Chomedey, Laval, Quebec, Canada
Filed Mar. 24, 1969, Ser. No. 809,734
Int. Cl. A47j 43/28
U.S. Cl. 107—48 R 11 Claims



A machine for making consistent ice cream cones wherein a scoop mechanism which is solely vertically movable is adapted to take ice cream from a bulk ice cream supply disposed on a turntable a mechanism being adapted to sequentially rotate and radially shift the turntable and a scooped ice cream transport mechanism being provided to transport the scooped ice cream from the scoop mechanism to a cone support where the scooped ice cream is deposited in an empty cone placed on the cone support.

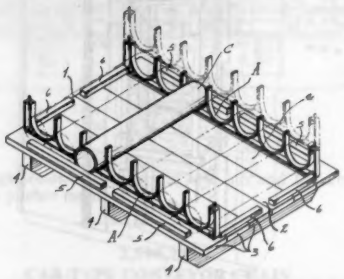
3,590,751
STRUCTURE
Jacob Freid, Detroit, and Charles Stanley Porter, Pontiac, both of, Mich., assignors to Atlas Pallet Corp., Pontiac, Mich.
Filed Dec. 15, 1967, Ser. No. 690,894
Int. Cl. B65d 19/18
U.S. Cl. 108—51 9 Claims



This invention relates generally to cardboard structures, and particularly those for use in industrial pallets. The cardboard structure comprises layers of corrugated cardboard with corrugations running in different directions. This allows the resultant structure to take significant amount of stress in different directions.

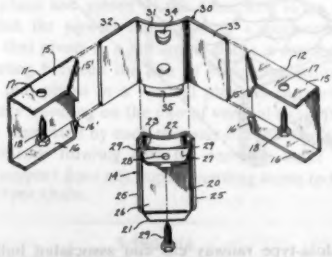
A pallet structure utilizing this cardboard also has feet formed from a single sheet of thin plastic material. It is free from sharp corners and stress risers and has ribs and ridges and valleys giving added strength to the resultant structure. A pallet having such feet has stringers made of a sandwich construction of corrugated cardboard covered by layers of corrugated cardboard having corrugations running in a direction perpendicular to the corrugations in the sandwich stringers.

3,590,752
LOADING RACK
Thomas N. De Pew, 10 Sunningdale Drive, St. Louis, Mo.
Filed Feb. 19, 1969, Ser. No. 800,503
Int. Cl. B65d 19/18
U.S. Cl. 108—53 7 Claims



A rack for the shipping and storing of cylindrical objects with their major axes parallel to the support surface comprising an elongated base, a plurality of upwardly opening U-shaped sections presented vertically upon said base and being of a depth greater than the diameter of the object; there being handle-forming portions at each end of the rack for facilitating handling thereof in loaded or unloaded state; and interconnecting, cooperative means provided on said racks for effecting securement between a lower rack and a rack superimposed thereon.

3,590,753
TABLE CORNER ASSEMBLIES
Robert O. Blink, Greenfield; William C. Lutzke, Milwaukee; Frederick C. Holtz, Milwaukee, all of, Wis., and Robert W. Schier, Cook County, Ill., assignors to Mitchell Manufacturing Co., Milwaukee, Wis.
Filed Dec. 17, 1969, Ser. No. 885,682
Int. Cl. A47b 7/02
U.S. Cl. 108—91 10 Claims

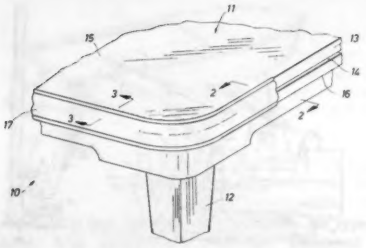


In a table having foldable legs there is provided an apron corner assembly including a resilient molded plastic element fitted over a metal supporting bracket, said bracket having projecting wings retained within the channel-shaped apron members and said plastic corner element being screwed to the underside of the table top to eliminate the need for welding and thereby increasing the variety of apron materials that can be utilized, said resilient corner element including an integral bottom pad which eliminates relative movement or marring of the table surfaces when said tables are folded and stacked or rested against each other.

3,590,754
EDGE BANDINGS FOR ARTICLES OF FURNITURE

Robert E. Kjer Jakobsen, Compton, Calif., assignor to Daystrom Virtue, Inc., Houston, Tex.

Filed July 11, 1969, Ser. No. 840,946
Int. Cl. A47b *13/00*
U.S. Cl. 103—161 6 Claims

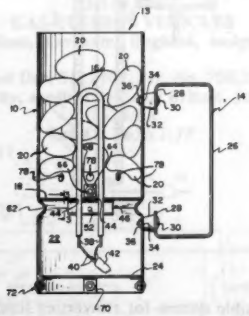


As a preferred embodiment of the invention disclosed herein, a pair of outstanding longitudinal projections or parallel flanges are arranged along the concave rearward face of an elongated banding strip of a deformable material, with one of these flanges being centrally located in relation to the width of the strip and the other of these flanges being located parallel and adjacent to one edge thereof. An article of furniture, such as a chair or table, having a horizontal planar member with an exposed upright edge is prepared for mounting of this elongated strip by cutting an elongated groove along the exposed edge that is parallel to the upper and lower surfaces of the member and sized for receiving the central flange of the banding strip. The elongated strip is then flattened along the exposed grooved edge with its central flange being pressed into the groove and its marginal flange overlapping the underside of the planar member. Once the banding strip is in position, fasteners are driven upwardly at spaced intervals through the marginal flange of the strip into the lower portion of the furniture member and to a depth sufficient to fully penetrate the centrally located flange in the groove and enter the upper portion of the furniture member.

3,590,755
CHARCOAL BRIQUETTE IGNITER

Michael H. Niemann, 920 Chestnut St., Wisconsin Rapids, Wis.

Filed Aug. 22, 1969, Ser. No. 852,311
Int. Cl. F23b *3/00*
U.S. Cl. 110—1 F 8 Claims

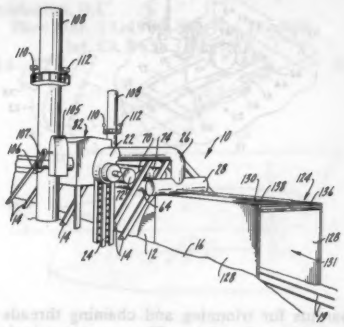


A containerized charcoal briquette igniter including a cylindrical housing for receiving charcoal having an inner bottom, a main bottom, handle and a vertically projecting, electric heating element clamped to the inner bottom and extending along the cylindrical axis of the housing.

3,590,756
INCINERATING METHOD AND APPARATUS

Walter Erman, Chicago, Ill., assignor to Erman, Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 695,488, Jan. 3, 1968. This application Apr. 27, 1970, Ser. No. 32,222
Int. Cl. F23g *7/00*
U.S. Cl. 110—18 C 37 Claims

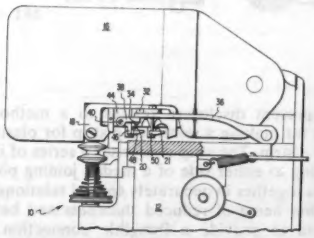


The invention relates to a method and apparatus for incinerating a railroad car in an incineration housing wherein the railroad car is ignited and a stream of air is delivered along the underside of the car while it is being burned. For railroad cars of the type having a center door opening, and as an alternative to, or in addition to, the stream of air on the underside of the car, air is blown into the interior of the car through the door opening during burning. The products of combustion produced during the burning are treated.

3,590,757
CHAINING MECHANISM FOR OVEREDGE SEWING MACHINE

George B. Armstead, Jr., 89 Harvest Lane, Glastonbury, Conn.

Continuation-in-part of application Ser. No. 792,654, Jan. 21, 1969, now abandoned. This application May 8, 1970, Ser. No. 35,649
Int. Cl. D05b *1/20*
U.S. Cl. 112—162 16 Claims



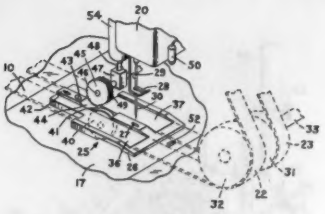
An improved chaining mechanism for an overedge sewing machine having a pair of needles supported in alignment in the direction of feed of work material through the machine for simultaneously penetrating the workpiece at spaced points along the length of a seam formed by the machine. A pair of chaining fingers are provided in alignment in the direction of feed through the machine, and in laterally spaced relation to the needles so that independent stitches formed with respective threads carried by each of the needles may be formed around a separate chaining finger.

3,590,758

CHAINING AND TRIMMING DEVICE

Francis H. Hughes, and Douglas J. Crawford, both of Troy, N.Y., assignors to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,410
Int. Cl. D05b 65/04
U.S. Cl. 112—252 12 Claims



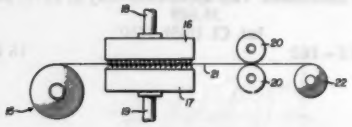
Apparatus for trimming and chaining threads during the chain stitching of articles. The apparatus includes a feed wheel which interacts with a hard surface to trim the chain thread and with a second wheel to provide chaining. Pneumatic means position the feed wheel for trimming and chaining operations.

3,590,759

REINFORCING STRIP FOR PLASTIC ARTICLES AND METHOD AND APPARATUS FOR MAKING SAME

George S. Hendrie, Jr., 330 Merriweather Drive, Grosse Pointe Farms, and Louis Truco, 19646 Old Homstead, Harper Woods, both of, Mich.

Continuation of application Ser. No. 746,444, July, 1968, now abandoned. This application Nov. 19, 1969, Ser. No. 871,674
Int. Cl. B21d 28/00
U.S. Cl. 113—116 2 Claims



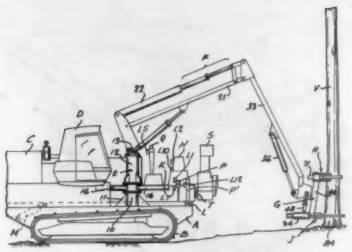
The present disclosure relates to a method of and apparatus for making a reinforcing strip for plastic articles and to such a strip. The strip comprises a series of individual slats projecting to either side of a medial joining portion securing the slats together in accurately spaced relationship, the medial portion being of reduced thickness and being previously stretched to provide a frangible connection. The strip is manufactured by slitting the strip from opposite edges toward the medial portion to form the slats, deflecting the slats to lie parallel with one another and at an angle to the plane of the initial strip while stretching and coining the medial joining portion. The angularly deflected slats are then reformed to a single plane, so the slats are spaced apart throughout the distance to which the medial joining portions have been stretched. The apparatus is primarily a pair of cooperable dies having cooperative slitting edges and deflecting surfaces for deflecting the slit slats and medial stretching and coining portions at which the medial portion of the strip is formed, together with a final straightening device for deflecting the slats back to their planar alignment.

3,590,760

TIMBER-HARVESTING MACHINE AND METHOD

John H. Boyd, Woodstock, Ontario, and James K. Robinson, Dryden, Ontario, both of, Canada, assignors to Timberjack Machines Limited, Woodstock, Ontario, Canada

Filed July 22, 1968, Ser. No. 746,416
Int. Cl. A01g 23/02
U.S. Cl. 144—3 D 7 Claims



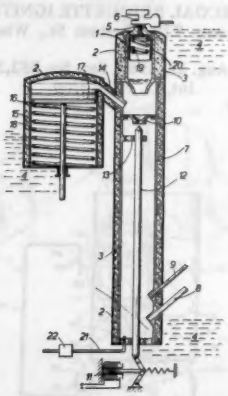
A self-propelled vehicle carries an extensible boom on the end of which there is mounted an assembly for grasping and felling a tree. The boom retracts to convey the felled tree to a processing platform on the vehicle. While the tree is being processed (delimbed and bucked into bolts) the boom returns to fell a second tree thus avoiding idle time. Delimbing is carried out by a delimbing head that slides out along the felled tree while it lies horizontally with one end clamped on the platform. The delimbing head then retracts to propel the tree back onto the platform where the delimbed portion is cut off to form a bolt, this process being repeated.

3,590,761

UNDERWATER GENERATION OF GAS

Grevis Hardie Parkes, 5 Stanhope Lodge, Queens Road, West Cowes, Isle of Wight, England

Filed Nov. 21, 1968, Ser. No. 777,769
Int. Cl. B63g 8/00
U.S. Cl. 114—16 26 Claims



A submersible system for converting liquid monofuel into gas comprises a fuel storage tank, a combustion chamber for the fuel, a variable-delivery fuel pump operable to deliver a quantity of fuel to the combustion chamber and means for distributing gas generated by decomposition of the fuel, the combustion space within the combustion chamber being subjected to the local ambient hydrostatic pressure of the water in which the system is submerged.

3,590,762

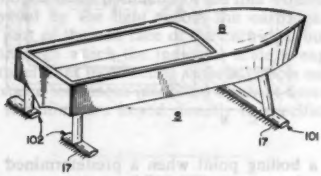
JET CIRCULATION CONTROL VEHICLE

Shao Wen Yuan, 3536 Hamlet Place, Chevy Chase, Md.

Continuation-in-part of application Ser. No. 669,080, Sept. 20, 1967, now Patent No. 3,472,192. This application Oct. 13, 1969, Ser. No. 865,936

Int. Cl. B63b *1/24*

U.S. Cl. 114—66.5 H 24 Claims



This invention is for vehicles of practically all types, including land- and water-based vehicles, equipped with hydro/air foil generally of the oval shape with slotted trailing edge for jet flow therefrom and circulation control of the flow around the foil to impart very high lift to the foil for controlling the vehicle without the necessity of changing the angle of attack of the foil.

3,590,763

GAS-CUSHION VEHICLES

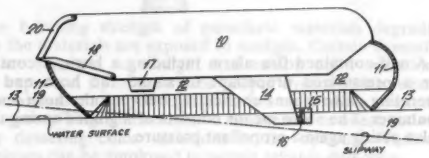
Rowland Delville Hunt, Portsmouth, England, assignor to Vosper Limited

Filed Oct. 21, 1968, Ser. No. 769,075

Claims priority, application Great Britain, Nov. 8, 1967, 67/50840

Int. Cl. B63b *1/34*

U.S. Cl. 114—67 5 Claims



A gas-cushion vehicle having a hull provided with supports adjacent the bow and skegs adjacent the stern upon which the vehicle can rest stably on a solid surface when the supply of gas to the cushion space is cutoff.

3,590,764

GAS-CUSHION VEHICLES

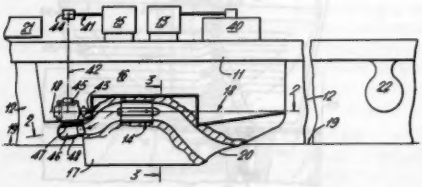
Rowland D. Hunt, Fareham, England, assignor to Vosper Limited

Filed Dec. 31, 1968, Ser. No. 788,232

Claims priority, application Great Britain, Jan. 11, 1968, 1624/68

Int. Cl. B63b *1/38*

U.S. Cl. 114—67 10 Claims



A water reaction propulsion mechanism for the vehicle is housed within a skeg or keellike member located within the gas-cushion space of the vehicle and is retractable to prevent damage to the propulsion mechanism when the vehicle is temporarily on land or in very shallow water. Auxiliary propulsion means are provided for use when said member is retracted.

3,590,765

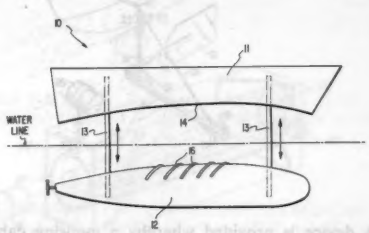
MODULAR HULL VESSEL AND METHOD OF OPERATION

Gabriel V. De Lizasoain, Rockville, Md., assignor to Tecnico, Inc., Washington, D.C.

Filed Mar. 13, 1968, Ser. No. 712,846

Int. Cl. B63b *3/02, 1/18*

U.S. Cl. 114—77 5 Claims



A waterborne vessel having a personnel and/or cargo carrier surface hull module, which normally seats on the surface of the water when at rest, is connected by depending struts to a submerged displacement hull module which contains the vessel engines, and its propulsion and steering means, and which provides a substantial portion of the buoyancy for the entire vessel. The struts are designed for extension and retraction so that the displacement hull module may be raised or lowered. The displacement hull module is constituted as a hydrodynamic lift body which, when in lowered position while the vessel is underway, lifts and maintains the entire personnel hull module out of the water to a height at which its bottom is out of contact with the surface of the water and above the crests of any waves thereon. When the vessel is docked or operating in shoal water the displacement hull module is positioned in substantial mating engagement with the bottom of the personnel hull module.

3,590,766

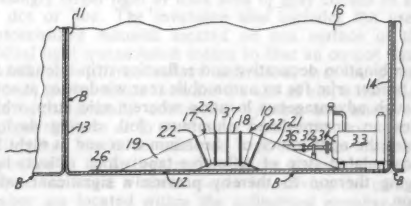
STEERING UNIT FOR BARGES AND THE LIKE

William M. Jackson, Greenville, Ala., assignor to Hydro-Vac, Inc.

Filed Feb. 25, 1969, Ser. No. 802,187

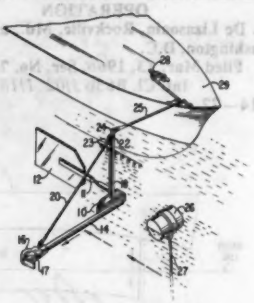
Int. Cl. B63b *25/46*

U.S. Cl. 114—151 1 Claim



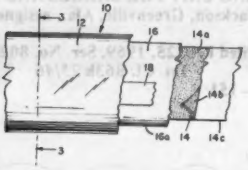
Steering unit for barges and the like having bottom and upstanding sides. Tube carried by barge extends transversely thereof with intermediate portion of tube communicating with downwardly and outwardly extending end portions terminating adjacent elevation of barge bottom. Propeller unit within tube moves water selectively in opposite directions to move adjacent portion of barge in opposite directions. Baffles adjacent side of propeller direct water toward the leading faces or propeller as water flows in direction to position baffle on suction side of propeller.

3,590,767
MOORING CABLE PICKUP DEVICE
Charles C. Dunbar, 62 Bowdoin St., Portland, Maine
Filed June 13, 1969, Ser. No. 833,083
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 9 Claims



A device is provided whereby a mooring cable may be picked up from a boat approaching a mooring. The device comprises a hook-presenting horizontally disposed hook arm; a horizontally disposed vane-carrying arm having a vertical vane secured to the remote end thereof, each arm being secured to a body member; and said device also comprises a vertically disposed suspending arm to the lower end of which the body member is attached and to the upper end of which a tie member is attached that extends to adjacent the extremity of the hook arm. Means is provided for attaching a towline to the upper end of the suspending arm.

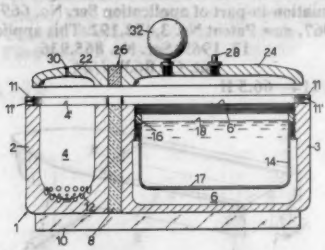
3,590,768
COMBINATION DECORATIVE AND REFLECTIVE STRIP
Victor Shanok, and Jesse P. Shanok, both of Brooklyn, N.Y., assignors to Glass Laboratories Company
Filed Jan. 2, 1969, Ser. No. 788,578
Int. Cl. B32b *15/08*; B60g *1/26*; E04f *19/02*
U.S. Cl. 116—28 6 Claims



A combination decorative and reflective strip intended for use as border trim for an automobile rear window or at some other such advantageous location wherein said strip, which includes an encapsulated aluminum foil, during daylight simulates the appearance of chromium trim and at night has an encapsulated strip of reflective tape which reflects light impinging thereon to thereby provide a significant safety function.

3,590,769
COOKING VESSEL WITH ELAPSED TIME INDICATOR
Shaul Ladany, 71 Reehov Aluf David, Ramat Gan, Israel
Filed May 15, 1970, Ser. No. 37,699
Int. Cl. G08b *17/04*
U.S. Cl. 116—103 6 Claims

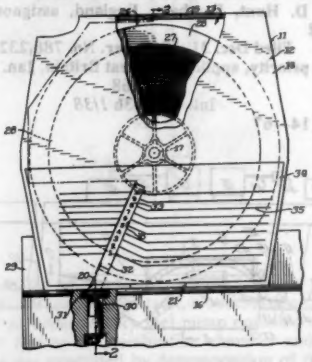
A cooking vessel for cooking an article, particularly an egg, and for providing a signal when a predetermined time of cooking has elapsed, comprises a container having a cooking compartment to contain the egg and water, and a signalling compartment to contain a larger quantity of water which is brought to a boiling point when a predetermined time has elapsed after the water in the cooking compartment begins to boil.



3,590,770
FIRE ALARM
William Wagner, c/o Watsco Inc. 1800 West Fourth Ave., Hialeah, Fla.
Filed Oct. 29, 1969, Ser. No. 872,193
Int. Cl. G08b *21/00*
U.S. Cl. 116—112 2 Claims

A self-contained fire alarm including a horn, a container for a pressurized propellant to sound the horn and self-operating valve means connecting between the horn and the container. The valve means consists of a guided spring-urged valve acting against propellant pressure.

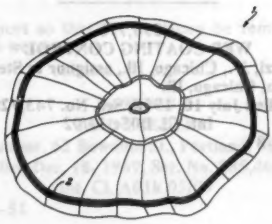
3,590,771
SCENE FINDER FOR PROJECTOR CARTRIDGE
James J. Lutsch, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed June 26, 1970, Ser. No. 50,269
Int. Cl. G01b *21/00*
U.S. Cl. 116—114 J 5 Claims



A cartridge adapted for mounting on a projector encloses a rotatably mounted reel on which film is wound. A light

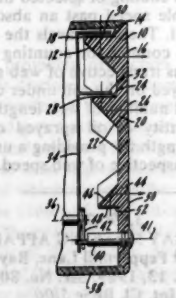
source, which is preferably mounted in the projector frame, registers with an opening in one edge of the cartridge to light the space within the cartridge between the peripheral surface of a portion of the film wound on tee reel and the adjacent walls of the cartridge. One face of the cartridge is provided with a radially disposed slot having its outer end adjacent the light source. A transparent or translucent indicator scale is mounted on one face of the cartridge in position to cover the slot so that the portion of the indicator scale extending radially beyond the outer perimeter of the film wound on the reel is illuminated by the light within the cartridge. An index covering part of the one face of the cartridge, but having an opening through which the indicator scale is exposed comprises parallel lines intersecting various indicia on said scale, whereby scene sequences identified by short descriptions entered on said lines are keyed directly to specific indicia on the scale.

3,590,772
PARACHUTE APPARATUS AND NONDESTRUCTIVE METHOD OF TESTING SAME
Jay D. Boone, Seeley, Calif.
Filed Apr. 4, 1968, Ser. No. 718,762
Int. Cl. G01d 21/00
U.S. Cl. 116—114 **11 Claims**



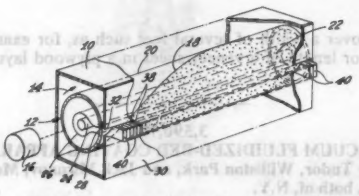
The breaking strength of parachute materials degrades when the materials are exposed to sunlight. Certain dyestuffs also are sensitive to sunlight and exhibit color variations upon exposure. By selecting the proper dyestuff with regard to the minimum acceptable degradation of breaking strength, the degree of degradation can be ascertained nondestructively by detecting color variations in the dyestuff. Various techniques can be employed to permit reliable detection.

3,590,773
ARCUATE PRISM DISPLAY
Albert L. Ruppert, Middleton, Wis., assignor to Oak Electro/Netics Corporation, Crystal Lake, Ill.
Continuation-in-part of application Ser. No. 747,717, July 25, 1968. This application May 19, 1969, Ser. No. 825,499
Int. Cl. G09f 9/00
U.S. Cl. 116—129 **15 Claims**



A display device using an arcuate-shaped prism having an object surface, an arcuate-reflecting surface and an image surface. There is fixed indicia positioned adjacent the object surface and movable indicator members arranged to move in a path adjacent the object surface such that the display at the image surface will provide useful information in the form of the relationship between the fixed indicia and movable indicator members.

3,590,774
LINEAR METER
Samuel Solow, 5451 Eau Claire Drive, Rollings Hills, Calif.
Filed May 29, 1968, Ser. No. 733,079
Int. Cl. G09f 9/00
U.S. Cl. 116—129 **3 Claims**

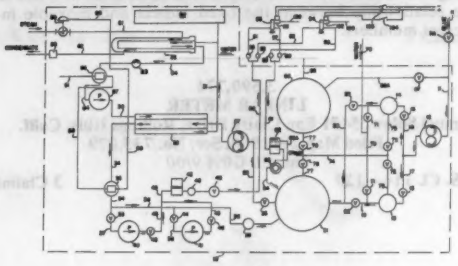


The present invention is directed to a linear meter for producing a linear indication from a rotatable movement and specifically to the type of linear meter including a cylindrical member. The cylindrical member is rotated about a central axis and progressive portions of a helical line on the surface of the cylindrical member present a linear display along a display line which is parallel to the axis of rotation of the cylindrical member. A plurality of individual light transmission means is positioned adjacent to the display line for transmitting the linear display to produce a crisp and clear output indication. Specifically, the individual light transmission means may include vertical light-conducting members separated by baffles and having twisted inner ends so that the inner ends are aligned with the slanted helical line on the cylindrical member. Also, the plurality of individual light transmission means may be small light pipes for transmitting the light energy to produce the output indication. The walls of the inner ends of both types of the light transmission means may include surfaces which absorb light energy so that only light substantially parallel to the light-absorbing surfaces would be passed through the light transmission means. Other aspects of the invention include the use of direct or reflected light to produce the output indication from the helical line on the cylindrical member. Also, the output indication from the linear meter of the present invention may consist of an increasingly larger light or dark area or may consist of a moving dot or line. The invention also includes the use of a photosensitive material located on one surface of the individual light transmission means so that an output signal, in accordance with the output indication, may be produced. Further, the invention includes the use of electroluminescent material electrically controlled by the activation of the photosensitive so as to produce a remote display or a larger display than could be achieved with the light transmission means alone. A further aspect of the invention includes a compact structure wherein means for driving the cylindrical member are located within the cylindrical member and include a d'Arsonval meter drive.

3,590,775
GLUE SPRAY SYSTEM
Stuart W. Barr, 2940 19th St. West, Eugene, Oreg.
Filed Feb. 26, 1968, Ser. No. 708,092
Int. Cl. B05c 11/10
U.S. Cl. 118—5 **3 Claims**

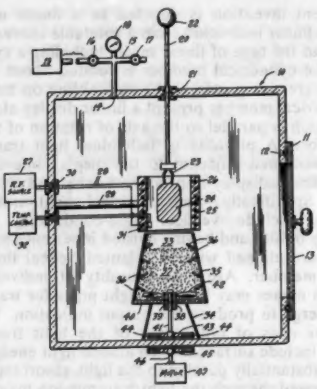
A glue spray system is disclosed providing for the filtering, heating and pressurizing of viscous glue material preparatory

to discharge thereof onto a surface. The glue is pressurized to the extent that a shaped discharge flow from a spray nozzle



may cover a width of several feet such as, for example, the width or length of a veneer sheet in a plywood layup operation.

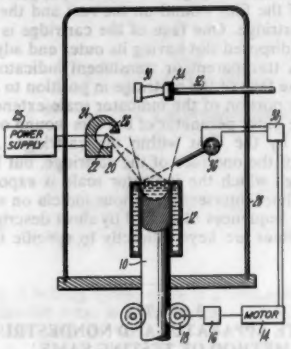
3,590,776
VACUUM FLUIDIZED-BED COATING APPARATUS
Sidney Tudor, Williston Park, and Jack Mironov, Mount Vernon, both of, N.Y.
Filed Mar. 24, 1969, Ser. No. 809,559
Int. Cl. B05c *11/12*
U.S. Cl. 118—5 **4 Claims**



A sealed chamber having means for evacuating the same and including means for suspending therein a workpiece to be coated and providing for the heating of said workpiece. A lower portion of said chamber contains the material for coating in fluidizable powder form. The coating powder is agitated and thereby fluidized the workpiece lowered and brought into direct contact with the fluidized bed while it is heated and the chamber is under vacuum. The workpiece is then raised and reheated to cure the powder adhering thereto. Additionally a partial vacuum is maintained by admitting a gas into the chamber while it is being evacuated at a greater rate.

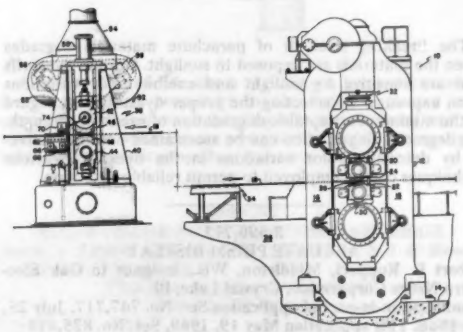
3,590,777
INGOT FEED DRIVE
Richard C. Elam, Rockville, and Frank P. Talboom, Jr., Glastonbury, both of, Conn., assignors to United Aircarft Corporation, East Hartford, Conn.
Filed Mar. 13, 1969, Ser. No. 806,957
Int. Cl. B05c *11/10*
U.S. Cl. 118—7 **4 Claims**

Apparatus for controlling the feed rate of a bar of coating alloy into the crucible from which the alloy is vaporized to be deposited on an article. By utilizing constant electron beam



power and maintaining constant pool height a constant evaporation rate and constant vapor chemistry is achieved.

3,590,778
WEB COATING CONTROL
Henry J. Mozzi, Jr., Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed July 10, 1968, Ser. No. 743,728
Int. Cl. B05c *11/02*
U.S. Cl. 118—8 **4 Claims**

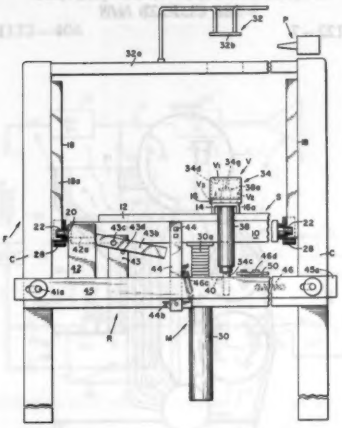


The following specification describes an arrangement for applying a uniform oil coating of selected thickness to a steel web moving at variable speed past an absorbent roll which coats the web with oil. The roll travels the same distance as the web and drives a counter for counting a predetermined number of web lengths irrespective of web speed. A selected quantity of oil is sprayed on the roll under control of a timer after a predetermined number of web lengths are counted to ensure that the quantity of oil sprayed corresponds to a predetermined web length for providing a uniform oil coat of selected thickness irrespective of web speed.

3,590,779
PAINT SPRAY MASKING APPARATUS
Edward L. Rich, 3980 Peppermill Lane, Bay City, Mich.
Filed Mar. 13, 1969, Ser. No. 807,776
Int. Cl. B05c *5/00*
U.S. Cl. 118—301 **12 Claims**

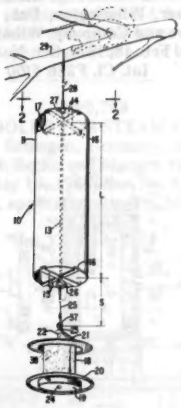
Paint spray masking mechanism useful in the spraying of parts which must be partially masked prior to spraying. After

the vessel is sprayed and removed from the mask, a stripper mechanism engages the inner surface of the part and raises it



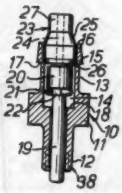
from its support so that the part can be removed without disturbing the wet spray.

3,590,780
BIRD FEEDER
Charles C. Dunbar, 62 Bowdoin St., Portland, Maine
Filed Dec. 16, 1969, Ser. No. 885,468
Int. Cl. A01k *05/00*
U.S. Cl. 119—51 **5 Claims**



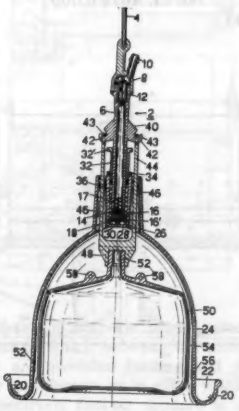
A bird feeder providing protection against theft of bird feed by squirrels is disclosed which comprises in combination a feeding device having a feeding zone accessible to birds and a drum-shaped guard presenting an at least approximately cylindrical vertical surface at least approximately 6 inches in diameter and at least approximately 18 inches in length. Means is provided which suspends the feeding device below the guard with the center of the feeding device substantially in alignment with the projected axis of the guard and with the uppermost portion of the feeding device spaced from the lowermost portion of the guard by a distance not greater than about the diameter of the guard, the spacing of the outermost extremity of the feeding device radially from the projected axis of the guard being not more than approximately 1 inch greater than that of the portion of the peripheral surface of the guard in vertical alignment therewith. And means is provided for preventing the passage of a squirrel through the interior of the guard and for suspending the guard from a support.

3,590,781
NIPPLE VALVES
Thomas H. N. Spencer, Ramley House, Pennington, Lymington, England
Filed Apr. 18, 1969, Ser. No. 817,323
Claims priority, application Great Britain, Apr. 25, 1968, 68/19,561
Int. Cl. A01k *07/00*
U.S. Cl. 119—72.5 **8 Claims**



In a nipple valve for use in drinking water supply systems for birds and of the type operated by a pin which projects out of an outlet of the valve and has a valve head which normally cooperates with a seating in a valve chamber in the valve body to close off the outlet and prevent passage of water out of the valve, the provision of an inlet port at the body by way of which water enters into the chamber and with which the valvehead cooperates when the pin is operated so as to prevent water entering into the chamber while the outlet is open.

3,590,782
RESTRICTED OSCILLATING TYPE SUSPENDED POULTRY DRINKING FOUNTAIN
Itzhak Kantor, Doar Na Menashe, Hof Hacarmel, Israel, assignor to Plasson Maagan Michael Industrial Ltd., Doar Na Menashe, Hof Hacarmel, Israel
Filed May 8, 1969, Ser. No. 823,061
Claims priority, application Great Britain, May 15, 1968, 23004/68
Int. Cl. A01k *07/00*
U.S. Cl. 119—81 **4 Claims**



A suspension-type poultry drinking fountain comprises a water trough, a valve, a freely swinging hanger supporting the trough in freely swinging suspension, a resilient mounting

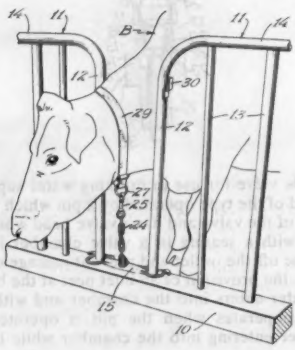
suspending a trough from the hanger such that when the water in the trough drops below a predetermined quantity the trough rises and opens the valve to permit more water to flow to the trough, and a mounting for supporting a weight, the weight mounting being attached directly to the hanger independently of the resilient mounting, whereby the weight minimizes swinging of the hanger and trough but does not affect the sensitivity of the resilient mounting of the trough for operating the valve.

3,590,783

SAFETY COW TIE

Ray E. Purgett, Route 2, Owen, Wis.

Filed June 11, 1969, Ser. No. 832,064
Int. Cl. A01k *01/06*
U.S. Cl. 119—119 **4 Claims**



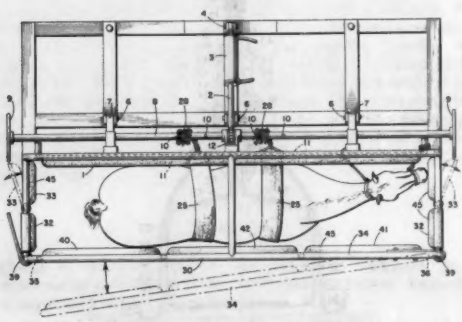
A cow-tie is provided including a tie bar having parallel U-shaped members at its ends which are detachably mounted on spaced stanchion bars of a stall. A flexible chain connects a center portion of the tie bar to a member encircling the neck of the cow. Movements of the head of the cow may slide the ends of the tie bar vertically along the stanchion bar.

3,590,784

LIVESTOCK TIPPING TABLE AND STALL

Howard Gene Fly, Box 33, Ovando, Mont.

Filed Apr. 25, 1969, Ser. No. 819,389
Int. Cl. A61d *03/00*
U.S. Cl. 119—103 **16 Claims**



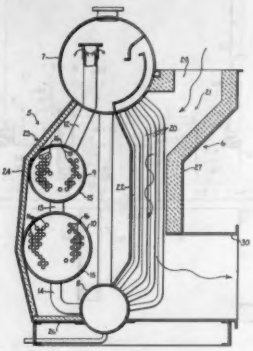
An improved livestock-tipping table and a stall associated therewith.

3,590,785

COMBINATION FIRE TUBE AND WATER TUBE BOILER

Denis G. Csathy, Minneapolis, Minn., assignor to Ray Go, Inc., Minneapolis, Minn.

Filed Feb. 26, 1970, Ser. No. 14,432
Int. Cl. F22b *1/18*
U.S. Cl. 122—7 **13 Claims**



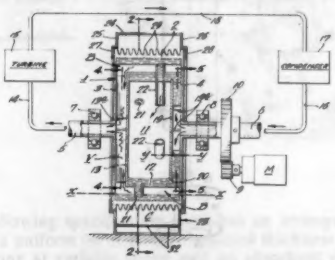
Fire tube and water tube boilers are mounted on opposite sides of one upright wall of a casing and connected to common mud and steam drums. The drums are communicated by downcomers which, together with fire tube boilers, are confined in a dead air space within the casing. The water tube boiler is mounted in an upright position in a gas pass on the exterior of the casing at one side thereof.

3,590,786

ROTARY BOILER

William A. Doerner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1970, Ser. No. 12,296
Int. Cl. F22b *5/00*
U.S. Cl. 122—11 **17 Claims**



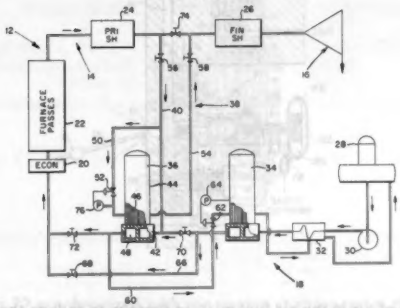
A rotary boiler comprising an outer annular boiler chamber and an inner cylindrical liquid supply chamber coaxially arranged to rotate together about a common axis. The boiler is rotated at a predetermined speed to maintain an annular body of liquid of uniform radial depth circumferentially about the inner peripheral surface of the boiler chamber and a similar annular body of liquid in the supply chamber. Radially extending feed conduits are provided to supply liquid from the inner chamber to the boiler chamber. Liquid flow through the feed conduits from the supply chamber to the boiler chamber is controlled by radially extending sensor conduits that interconnect said chambers and function in cooperation with the feed conduits automatically to maintain the radial depth of the annular body of liquid in the boiler chamber at the desired predetermined level during operation of the boiler.

3,590,787

STARTUP SYSTEM

William D. Stevens, North Caldwell, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed July 16, 1969, Ser. No. 842,283
Int. Cl. F22b *35/14*
U.S. Cl. 122—406 5 Claims



An improved startup system for a vapor generator of the once-through type. The system includes a startup bypass line which leads directly to the tube side of a shell and tube feedwater heater for the generator feedwater circuit, from certain heating passes of the generator main flow circuit; a branch line which leads from the bypass line to the shell side of the heater; and a return line which returns the flow from the heater shell side back to the generator main flow circuit downstream of the bypass line. A pressure reducing valve in the branch line reduces the pressure of the fluid flowing therein lowering its temperature for heat exchange with fluid on the tube side of the heater.

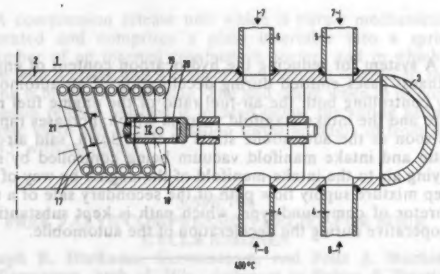
The feedwater circuit of the generator includes a bypass around the heater, the generator further having shutoff valves in both the startup system and feedwater circuit for isolating the heater from one or the other of the main flow or feedwater circuits depending upon use of the heater.

3,590,788

INJECTION COOLER FOR STEAM POWER PLANT

Rupprecht Michel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 14, 1969, Ser. No. 824,561
Claims priority, application Austria, May 16, 1968, A 4730/68
Int. Cl. F22g *5/12*
U.S. Cl. 122—487 10 Claims



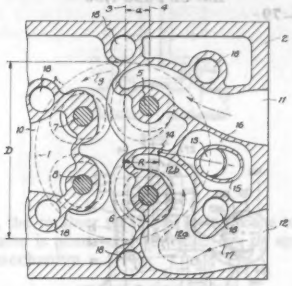
Injection cooler for steam power plants includes a substantially hollow tubular member having a steam inlet and traversable by cooling steam supplied thereto through the steam inlet, at least one nozzle located in the tubular member in the vicinity of the steam inlet, and passage means disposed along the inner surface of the tubular member for supplying injection water to the nozzle.

3,590,789

CYLINDER HEAD FOR A FUEL INJECTION INTERNAL COMBUSTION ENGINE

Klaus Wiebicke, and Georg Jaeckel, both of Nurnberg, Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany

Filed Feb. 6, 1970, Ser. No. 9,164
Claims priority, application Germany, Feb. 8, 1969, P 19 06 443.8
Int. Cl. F02b *3/00, 23/00*
U.S. Cl. 123—30 1 Claim



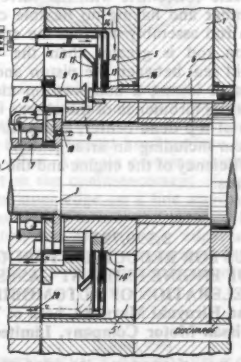
Two intake air valves are used to produce a unidirectional air swirl in the cylinder of a fuel injection internal combustion engine. The air swirl velocity profile lies between v = constant and v/r x constant wherein v is the air swirl velocity and r is the cylinder radius.

3,590,790

CONTACT-FREE OIL SEAL FOR ROTARY PISTON INTERNAL COMBUSTION ENGINES

Hans Keylwert, and Hubert Abermeth, both of Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Aug. 19, 1969, Ser. No. 851,200
Claims priority, application Germany, Sept. 7, 1968, P 17 76 037.1
Int. Cl. F02b *53/00;* F16c *33/74*
U.S. Cl. 123—8.01 6 Claims



A contact-free oil seal for rotary piston internal combustion engines in which between the piston and the transmission there are provided feeding and discharge conduit means for the gas change, or in other words, procedure that fresh air respectively fuel-air mixture is supplied into the combustion chamber and the exhaust gases pushed out. These conduit means are separated from the transmission chamber by an oil seal having at least two axially spaced discs connected to the piston and with narrow axial play

slidingly engaging the outer wall of an annular blocking chamber connected to the housing and adapted to be placed into communication with a source of fluid pressure.

3,590,791

INTERNAL COMBUSTION ENGINE AND FUEL INJECTION SYSTEM THEREFOR

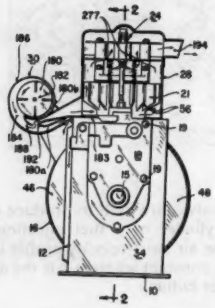
Vernon D. Roosa, Hartford Machine Screw Company P.O. Box 1440, West Hartford, Conn.

Division of Ser. No. 615,782, Feb. 13, 1967, Pat. No. 3,450,121. This application June 2, 1969, Ser. No. 850,276

1969, Ser. No. 850,276

Int. Cl. F02d *1/00*

U.S. Cl. 123—79 **13 Claims**



A new monovalve internal combustion engine of a design specially adapted for screw machine manufacture and including a valve support requiring no lubrication, a combination pull rod and fuel conduit secured to a reciprocating member of a two stage injection pump with the pull rod and both pumps operated by a single compound cam arrangement, a fuel injection nozzle concentric with the valve and with the combustion chamber and having no flexible connections, a fabricated piston rod assembly wherein the crankshaft bearing of the piston rod is greater than the throw of the crankshaft, a fluid seal between the piston and the cylinder against compression losses, a compression chamber which ensures an increasing turbulence of the charge in the cylinder with a maximum at top dead center, and a novel air blower and cleaner system including an arrangement for increasing the volumetric efficiency of the engine and the efficient purging of exhaust gases.

3,590,792

APPARATUS FOR REDUCING HYDROCARBON CONTENT OF ENGINE EXHAUST GASES DURING DECELERATION OF AUTOMOBILE

Kenji Masaki, and Hiroyuki Maruoka, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

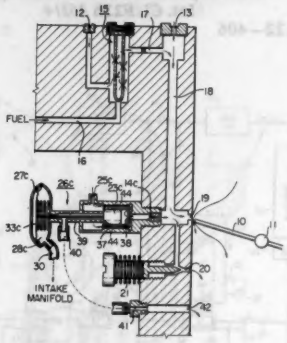
Filed Dec. 5, 1968, Ser. No. 781,530

Claims priority, application Japan, Mar. 30, 1968, Mar. 30, 1968, Mar. 30, 1968, 43/20781; 43/20782; 43/20783

Int. Cl. F02d *9/00*; F02m *23/04*

U.S. Cl. 123—97 **6 Claims**

System for reducing the engine exhaust gas hydrocarbon content during deceleration of an automobile comprising means which is adapted to reduce the proportion of air in the air-fuel mixture to be drawn to the intake manifold of the engine when the carburetor butterfly valve is substantially fully closed with the resultant increase in the intake manifold vacuum and means for introducing atmospheric air into the intake manifold concurrently with the reduction in the proportion of air in the air-fuel mixture thereby to reduce the intake manifold vacuum.



3,590,793

APPARATUS FOR REDUCING HYDROCARBON CONTENT OF ENGINE EXHAUST GASES DURING DECELERATION OF AUTOMOBILE

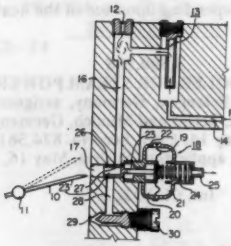
Kenji Masaki, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 5, 1968, Ser. No. 781,532

Claims priority, application Japan, Mar. 30, 1968, 43 20785

Int. Cl. F02m *3/02*

U.S. Cl. 123—97 B **4 Claims**



A system for reducing the hydrocarbon content of engine exhaust gases emitted during deceleration of an automobile by controlling both the air-fuel ratio of the engine fuel mixture and the intake manifold vacuum which increases rapidly as soon as the automobile starts to slow down, said air-fuel ratio and intake manifold vacuum being controlled by supplying air to the intake manifold of the engine by way of the step mixture supply flow path of the secondary side of a carburetor of compound-type, which path is kept substantially inoperative during the deceleration of the automobile.

3,590,794

FUEL INJECTION AND TRANSFER PUMP

Roger O. Durham, 3958 Marathan St., Los Angeles, Calif.

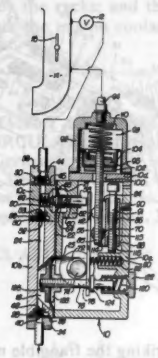
Filed Dec. 16, 1968, Ser. No. 783,984

Int. Cl. F02m *51/02*

U.S. Cl. 123—140 MP **26 Claims**

A fuel injection pump operates on the fuel density principle. A pump element 54 (FIGS. 1 and 2) is reciprocated in order to deliver a controlled volume of fluid each cycle to

the intake manifold 14. A lever 56 operates the pump element 54 and is reciprocated about a fulcrum 70. An eccentric 72 synchronized with the engine shaft operates the lever 56.

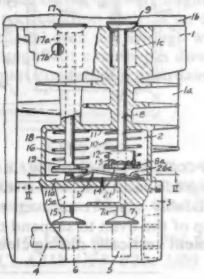


3,590,795

COMPRESSION RELEASE DEVICE, ESPECIALLY FOR INTERNAL COMBUSTION ENGINES

Albert A. Weglage, and David E. Weglage, both of Dayton, Ohio, assignors to Walter Becker, Dayton, Ohio, a part interest

Filed July 7, 1969, Ser. No. 839,357
Int. Cl. F01l *13/08*
U.S. Cl. 123—182 **15 Claims**



A compression release unit which is purely mechanically operated and comprises a plate insertable into a spring chamber of an internal combustion engine, and in which a wire with a crank and a control arm resilient relative to said crank is hinged to said plate. The said crank when in its compression release position is located below the spring keeper of one valve and in this position forms an angle of from 69° to 45° with said plate.

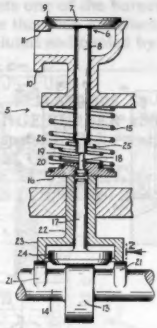
3,590,796

FREE VALVE COMPRESSION RELIEF FOR FOUR CYCLE ENGINES

Joseph R. Harkness, Germantown, and Felix J. Stuckert, Wauwatosa, both of, Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Nov. 20, 1969, Ser. No. 878,358
Int. Cl. F01l *13/08*
U.S. Cl. 123—182 **3 Claims**

In a free valve compression relief arrangement for a four-stroke cycle engine, like that of Harkness et al. U.S. Pat. No. 3,306,276, wherein the valve has a lost motion connection with the retainer for its spring, the spring retainer is maintained in its free valve position at predetermined times in the engine cycle when the valve is within a small distance from its seat by means of an auxiliary cam and an auxiliary tappet. Otherwise, the retainer transmits spring force to the valve so that the valve is positively controlled by its spring and cam actuating mechanism.

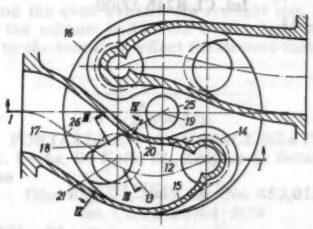


3,590,797

COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINES

Hans Jurgen Blank, Mannheim, Germany, assignor to Motoren-Werke Mannheim A.G., Mannheim, Germany

Filed July 2, 1969, Ser. No. 838,492
Claims priority, application Germany, July 6, 1968, P 17 51 664.2
Int. Cl. F01l *1/04, 3/00*; F02b *3/00*
U.S. Cl. 123—193 H **2 Claims**



A compression-ignition internal combustion engine cylinder head contains an air inlet duct having two outlets encircled by the seats of two inlet valves of a cylinder. The duct extends from a lateral head surface to one outlet and thence to the other. A single covering shield shaped as a circular segment at the commencement of the one outlet has the ends of its inner edge on a line approximately radial of the cylinder as viewed axially and inclined to the axis of the associated valve, and has its inner edge, at the closest approach thereof to the latter axis, spaced from the latter axis an amount 0.25 to 0.45 times the inner diameter of the associated valve seat.

3,590,798

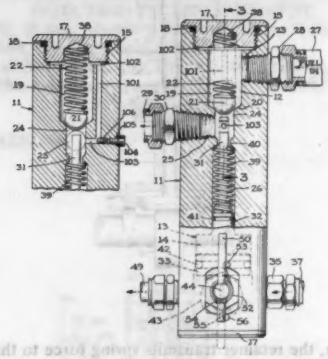
ENGINE SAFETY DEVICE RESPONSIVE TO ABNORMAL OIL PRESSURE AND COOLANT TEMPERATURE CONDITIONS

Joe E. Goodwin, Houston, Tex., assignor to Sentinel Distributors, Inc., Denver, Colo.

Filed Apr. 21, 1969, Ser. No. 818,013
Int. Cl. F01m *1/24*
U.S. Cl. 123—198 D **3 Claims**

A safety device for controlling the supply of fuel to a vehicular internal combustion engine, responsive to the occurrence of abnormal oil pressure or coolant temperature conditions in lubricating and cooling systems associated with

the engine, has an adjustable, restricted flow bypass around the main fuel valve such that, when the main valve closes automatically due to an emergency condition, sufficient fuel reaches the engine to keep it running at a reduced speed so that the operator retains control of the vehicle.



3,590,799

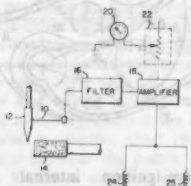
METHOD OF DRESSING THE GRINDING WHEEL IN A GRINDING MACHINE

Gerszon Gluchowicz, 5 Urdavagen, 182, 64 Djursholm, Sweden

Continuation-in-part of application Ser. No. 463,939, June 14, 1965, now Patent No. 3,404,670, dated Oct. 8, 1968. This application Sept. 3, 1968, Ser. No. 784,966

Int. Cl. B24b *53/00*

U.S. Cl. 125—11 **5 Claims**



During the dressing of a rotatable grinding disc or wheel, a feeler, which is connected to the dressing tool holder, senses the vibrations of the holder, and transforms them into electrical signals, the potential of which is proportional to the depth to which the tool penetrates the surface of the disc. These signals are used to control the cutting depth of the dressing tool, when necessary; and they may be used to effect repetition of the dressing until a signal of predetermined potential is attained.

3,590,800

MACHINE FOR CLEANING FRANGIBLE MATERIAL FROM SOLID OBJECTS

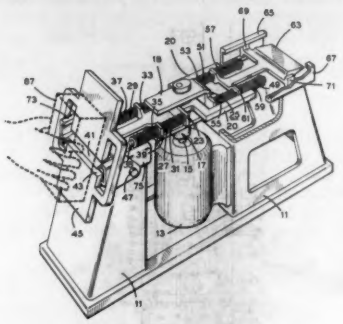
Edward D. Lewis, Jr., 3805 Wooten Drive, Fort Worth, Tex.

Filed Jan. 7, 1969, Ser. No. 789,520

Int. Cl. B28d *1/26;* E02d *7/18;* B25d *11/12*

U.S. Cl. 125—26 **9 Claims**

A machine for cleaning frangible material such as mortar from solid objects such as brick by utilization of a reciprocal mass mounted for striking the frangible material at a selected frequency, angle, and penetration.



3,590,801

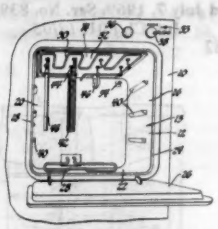
SELF-CLEANING OVEN HAVING MEANS TO HANG AUXILIARY RANGE EQUIPMENT

George B. Long, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,610

Int. Cl. A21b *1/00;* F24c *15/16*

U.S. Cl. 126—19 R **5 Claims**



A porcelain-coated self-cleaning oven has means to pyrolytically degrade food soil. The oven is formed with embossments to slidably support an oven rack. Hooks are provided on the top of the oven to suspend the racks and auxiliary range equipment vertically during cleaning.

3,590,802

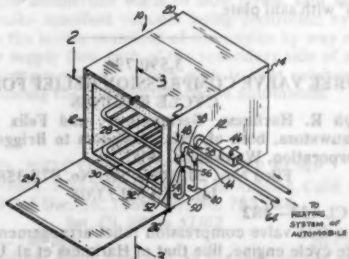
AUTO-FOOD WARMER

Jacob Fried, 68 Davenport, Detroit, Mich.

Filed July 22, 1968, Ser. No. 746,545

Int. Cl. F24b *1/00*

U.S. Cl. 126—19.5 **6 Claims**



This invention relates to a warmer for food. The warmer is heated by the coolant passing through the engine cooling

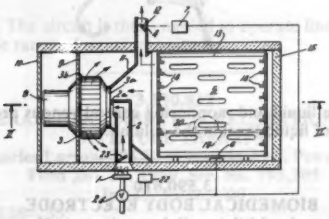
system of a motor vehicle. The warmer comprises an enclosure member; racks of pipes; conduits to the pipes; means insulating heat within the enclosure; the article supposed to be warmed supported by the racks; and the pipes in the racks transferring heat from the engine coolant flowing therein to and from the conduits.

3,590,803

FOOD-TREATMENT APPARATUS WITH GAS-CIRCULATING MEANS

Paul Sauer, Burg, Germany, assignor to Burger Eisenwerke Aktiengesellschaft, Herborn Dillkreis, Germany

Filed June 26, 1969, Ser. No. 836,742
Claims priority, application Germany, July 20, 1968, B 76 543/36
Int. Cl. A21b *1/26*; F24c *15/32*
U.S. Cl. 126—21 **5 Claims**



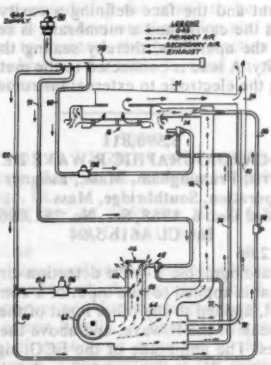
A food-treatment apparatus—an oven—has a housing in which a food-treatment chamber is enclosed along with an axial-input radial-output blower for circulating air in the housing through the chamber. Heat is drawn from an external gas burner through a conduit which opens in the housing adjacent the axial input of the blower. Slightly upstream of this conduit (in the recirculation path) is an exhaust conduit of variable cross-sectional area out through which heated air can flow. The food-treatment chamber is downstream of the mouth of the heat-input conduit and upstream of the exhaust conduit.

3,590,804

SELF CLEANING GAS FIRED OVEN

John A. Welshofer, Cleveland, and Earl T. Rhinehart, Apison, both of, Tenn., assignors to Magic Chef Inc., Cleveland, Tenn.

Filed Feb. 5, 1969, Ser. No. 796,756
Int. Cl. A21b *1/28*; F24c *3/00*
U.S. Cl. 126—21 **4 Claims**



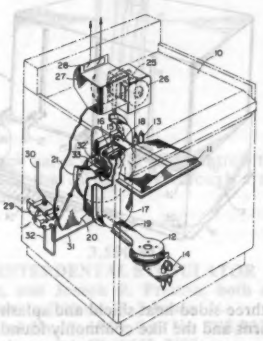
An oven cavity having an upper broil burner and a lower bake burner both of which are supplied with air from a motor driven blower and a centrifugal switch disables both burners when the blower stops. A first selector places both burners in operation for cleaning or conditions the apparatus for cooking and first thermostat cuts the broil burner out when cleaning temperature is approached. A second cooking selector and thermostat selects one of the burners for cooking operation. Hot gases from the oven are discharged into surrounding air after being diluted and cooled by air from the blower.

3,590,805

GAS RANGE BURNER ASSEMBLY

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Apr. 14, 1969, Ser. No. 815,924
Int. Cl. A21b *1/28*; F23d *11/44*; F24c *15/32*
U.S. Cl. 126—21 A **12 Claims**



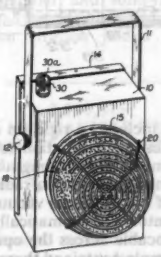
The gaseous fuel as it is delivered to the burner is heated to expand the same and compensate for expansion of the combustion air which occurs and alter the gas-air ratio. In an oven with a heat exchanger, in which air supplied to the oven burner and the oven exhaust are brought into heat transfer relation, the exhaust is directed over a heat section in the fuel line to the burner to effect the desired fuel temperature rise.

3,590,806

PORTABLE L. P. GAS SPACE HEATER

Joseph K. Locke, De Kalb, Ill., assignor to Bernzomatic Corporation

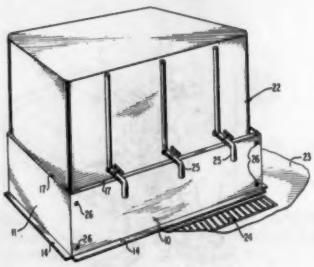
Filed Aug. 21, 1969, Ser. No. 852,015
Int. Cl. F24c *3/04*, *3/14*
U.S. Cl. 126—92 **5 Claims**



An attractive lightweight portable L. P. gas space heater comprises a boxlike rectangular housing having space for two disposable L. P. gas cartridges. A circular catalytic heating element is mounted on the front of the heater. The catalytic unit is a porous pad which allows the gas to seep through and upon contact with the air burns the same on its outside surface. Since no premixing with air is required the back space behind the catalytic pad in the heating element is directly connected to one of the two L. P. cartridges in the housing or the carrying case. To permit compact construction, a flexible gas line is used so that the L. P. cylinder can be connected

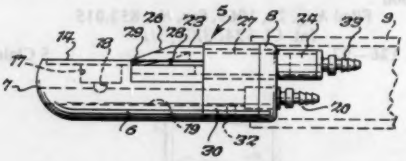
thereto external of the housing. The gas line attaches to the cylinder with a finger adjustable regulator valve which valve, when mounted on the cartridge, is designed to have its control knob extend through the housing on the top portion so that it is readably accessible. The rear wall of the carrying case is hinged to open so that the gas cartridges, one of which is a spare, are accessible and can be readily exchanged.

3,590,807
HEAT SHIELD AND SPLASH GUARD FOR URNS
Everett R. Seek, 316 Linthicum St., Rockville, Md.
Filed May 5, 1969, Ser. No. 821,896
Int. Cl. F24c *15/36*
U.S. Cl. 126—201 **5 Claims**



A unitary three-sided heat shield and splash guard for gas-fired coffee urns and the like commonly found in restaurants. The device protects restaurant personnel and portable beverage receptacles from the flame and also provides positive drainage of any spillage to the counter drain.

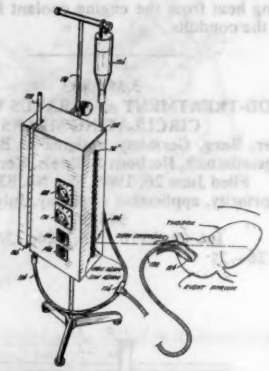
3,590,808
BIOPSY TOOL
Wolf F. Muller, Southampton, N.Y., assignor to United States Catheter & Instrument Corporation, Glens Falls, N.Y.
Filed Sept. 4, 1968, Ser. No. 757,366
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **9 Claims**



A biopsy tool that includes a rigid tip affixed to the distal end of a flexible intestinal intubation tube and is provided with a body portion having a longitudinal duct for the passage of an exchange guide and a radial cavity connected through the lumen of the tube to a vacuum source to draw a tissue sample thereinto. A pneumatically operable knife is longitudinally reciprocable across the open end of the cavity to sever the tissue sample contained therein.

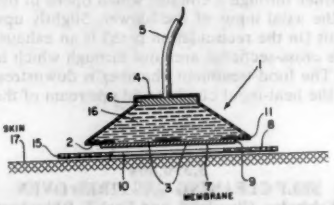
3,590,809
METHOD FOR CENTRAL VENOUS PRESSURE MONITORING
Seymour B. London, 35 East Dilido Drive, Miami Beach, Fla.
Filed Mar. 5, 1968, Ser. No. 710,485
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **2 Claims**

Method of central venous pressure monitoring including inserting a catheter in the right atrial cardiac chamber, supporting a vertical column of liquid above said chamber, transmitting light through the column and the liquid, discriminately sensing that light which has been transmitted



through the liquid and monitoring central venous pressure as a function of liquid level in the column.

3,590,810
BIOMEDICAL BODY ELECTRODE
Milos T. Kopecky, Littleton, Colo., assignor to Honeywell Inc., Mineapolis, Minn.
Filed May 27, 1968, Ser. No. 732,145
Int. Cl. A61n *1/04*
U.S. Cl. 128—2.06 **8 Claims**

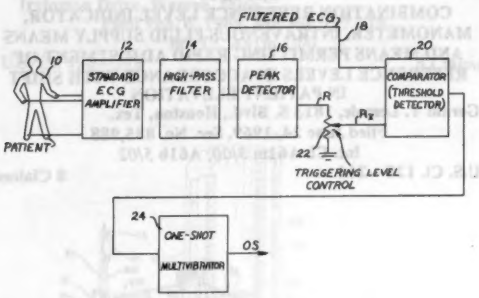


A biomedical body electrode is provided having a nonconductive housing with an apertured face for application to a body surface. A metallic element is mounted within the housing, the element and the face defining a cavity therein. An electrolyte fills the cavity and a membrane is secured to the face to cover the apertures, thereby sealing the electrolyte within the cavity. A lead is connected to the metallic element for connecting the electrode to external instrumentation.

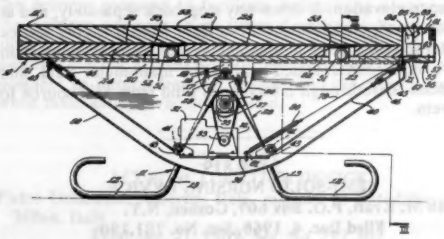
3,590,811
ELECTROCARDIOGRAPHIC R-WAVE DETECTOR
George J. Harris, Framingham, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 6, 1968, Ser. No. 781,896
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 **5 Claims**

An electrocardiographic R-wave detection circuit in which the ECG. signal is applied to one input of a comparator. The threshold level, applied to the other input of the comparator, is below the peak of the R-wave, and above the peaks of the P and T waves. The amplitude of the ECG. signal can vary over a wide range depending upon the placement of electrodes, etc. For this reason, the threshold level is continuously adjustable in accordance with the peak swing of the input signal. The threshold level is a fraction of the peak signal swing, the selected fraction being such that the threshold level always falls between the peak of the R-wave

and the peaks of the P- and T-waves. The threshold level adjustment circuit has a time constant of approximately 10 seconds. The circuit is thus enabled to operate linearly over a very wide range of signal magnitudes.



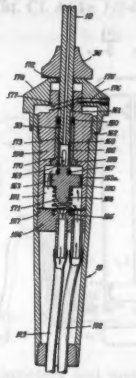
3,590,812
THERAPEUTIC TABLE FOR RELAXATION AND ATTITUDE THERAPY
Alvin Charles Larson, 206 E. Wisconsin Ave., Pewaukee, Wis.
Filed Jan. 30, 1969, Ser. No. 795,205
Int. Cl. A61h 1/00
U.S. Cl. 128—33 **8 Claims**



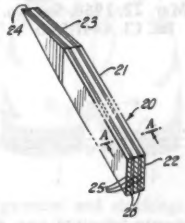
Therapeutic table for relaxation and attitude therapy, capable of being tilted up to 45° in either direction about an axis extending parallel to the transverse center of the table. The table includes a flat pad mounted on longitudinally aligned vibrator plates extending substantially the length of the pad. Leg straps for strapping down the ankles are provided at one end of the pad and include tensioning means for the straps accommodating the straps to be relatively loose when the table is in a horizontal position and placing tension on the straps to increase the holding action of the straps against the ankles as the table is tilted to place the head lower than the ankles.

3,590,813
ORAL HYGIENE APPLIANCE
Leon M. Roszyk, Berwyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Apr. 15, 1969, Ser. No. 816,332
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **15 Claims**

An oral hygiene appliance comprising a housing having a hollow base member which supports a liquid reservoir container and a storage and display compartment for the jet nozzles and jet nozzle handle. A liquid pump assembly of the reciprocating piston type is mounted in the base member such that a spout in the bottom of the reservoir container feeds a liquid to the pump chamber. This liquid is converted to a sequential series of liquid pulses by the pump and then delivered through a coiled tube to a jet nozzle control handle which discharges the liquid pulses from a jet nozzle. The jet nozzle control handle has a normally closed valve element to prevent the discharge of the liquid pulses until opened by pressing down on the jet nozzle's fluted knob and has an adjustable feedback valve element that controls the portion of each liquid pulse that is fed back through a second coiled tube to the pump.



3,590,814
INTERDENTAL STIMULATOR
Bailey Bennett, and Joseph R. Preston, both of Columbus, Ohio, assignors to Johnson & Johnson
Filed Jan. 3, 1969, Ser. No. 788,823
Int. Cl. A61h 7/00
U.S. Cl. 128—62 A **10 Claims**

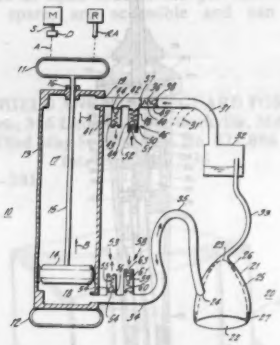


An interdental stimulator consisting essentially of nonharmful synthetic resinous polymeric material, preferably polystyrene, with cellular and solid-film stratums thereof disposed longitudinally in parallel and alternating sequence with each solid-film stratum joined to adjacent cellular stratums.

3,590,815
PORTABLE MECHANICAL VENTRICULAR ASSISTANCE DEVICE
Peter Shiff, RD #2, Lambertville, N.J.
Filed Jan. 7, 1969, Ser. No. 789,551
Int. Cl. A61h 7/00
U.S. Cl. 128—64 **7 Claims**

A portable mechanical ventricular assistance device including a ventricular assistor cup designed to receive the ventricles of the heart. The cup assembly is comprised of a rigid shell having a configuration generally conforming to the surface configuration of the heart ventricles and a flexible liner which is caused to contract and expand about the heart ventricles to effect the pumping action. The heart ventricles are retained within the cup by a substantially sustained negative pressure while the pumping action is produced by the application of alternating positive and negative pressure pulses to the cup. Both the sustained negative pressure and the positive and negative pressure pulses are generated by a hand pump assembly which includes a manually operable handle

connected through a piston rod to a reciprocating piston mounted within the cylinder of the pump. The piston effectively divides the cylinder into two chambers, one of which is coupled through a conduit to provide the sustained negative pressure to the cup. The remaining chamber is coupled

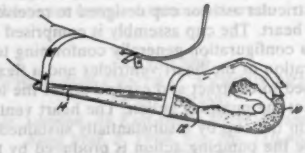


through a second conduit to the ventricle assistor cup to provide for the alternating positive and negative pressure pulses. Suitable adjustable relief valves are provided in each of the conduits to regulate the pressure levels and the positive or negative pressure directed to the cup.

3,590,816
PLACEMENT UNIT FOR INTRAUTERINE CONTRACEPTIVE DEVICES
Gerald S. Rosenthal, Ogden, Utah, assignor to Julius Schmid, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 461,281, June 4, 1965, now abandoned , Continuation of application Ser. No. 515,284, Oct. 24, 1965, now Patent No. 3,374,788. This application Mar. 22, 1968, Ser. No. 715,256
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **9 Claims**

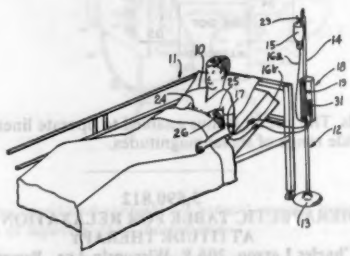
A unit for correctly placing an intrauterine contraceptive device (IUCD) in the female uterine cavity while preserving the sterility of the IUCD, the unit comprising a plunger attached at its leading end to one end of the IUCD for manipulation of the IUCD into and out of a tubular inserter by manual control exerted upon the trailing end of the plunger which projects beyond the trailing end of the tubular inserter.

3,590,817
ARM AND HAND RECEIVING SUPPORT
Richard C. Wresch, P.O. Box 842, Lama Linda, Calif.
Filed Aug. 26, 1968, Ser. No. 755,324
Int. Cl. A61f *13/00*
U.S. Cl. 128—133 **3 Claims**



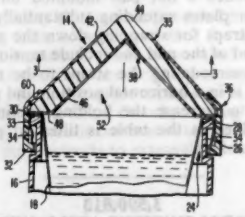
An apparatus for receiving the taped hand and forearm of a patient receiving an intravenous hypodermic injection so that the palm and fingers comfortably grasp a slightly flexible ball member and the hand heel and forearm rest in a conforming trough.

3,590,818
COMBINATION REFERENCE LEVEL INDICATOR, MANOMETER, INTRAVENOUS FLUID SUPPLY MEANS AND MEANS PERMITTING RAPID ADJUSTMENT OF REFERENCE LEVELS IN ACCORDANCE WITH SHIFT IN PATIENT ELEVATION
Gerald T. Lemole, 1813 S. Blvd., Houston, Tex.
Filed June 24, 1969, Ser. No. 835,988
Int. Cl. A61m *5/00;* **A61b** *5/02*
U.S. Cl. 128—214 **8 Claims**



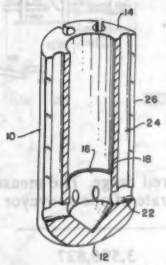
The disclosure disposes a reference level indicator gauge, rapidly adjustable on an adhesive strip to establish a patient reference (right atrium) elevation adjacent a manometer on a corresponding adhesive strip with relation to which the manometer may be rapidly adjusted to establish a matching reference elevation. A three-way stop cock separately, and at various times, places intravenous fluid from a supply source counterpoised against a manometer fluid, intravenous fluid from a vein counterpoised against the manometer fluid, and continues therethrough intravenous fluid from said source to said vein.

3,590,819
SEMI-SOLID NURSING DEVICE
Lisbeth M. Kraft, P.O. Box 607, Goshen, N.Y.
Filed Dec. 4, 1968, Ser. No. 781,190
Int. Cl. A61j *11/04*
U.S. Cl. 128—252 **9 Claims**



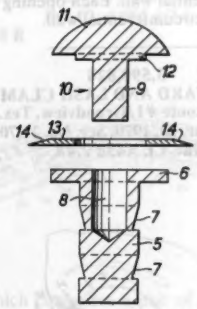
There is disclosed herein an improved nursing device and nipple for use by human infants and also by infants of other mammalian species. For human infants, the nursing device is in the form of a rigid casing with a collapsible milk reservoir and an attached nursing nipple. For use by other mammalian species, e.g. in sterile breeding of laboratory animals, other configurations may be employed. The nipple itself is comprised of a body of semisolid open-celled resilient material such as sponge rubber molded to the shape of the mammary gland of the species for which the device is to be used. A nonporous covering is provided on the outside of the body with an opening for fluid withdrawal directly from the cellular structure of the body. A metering device attached to the undersurface of the nipple body provides control of fluid flow by means of a plurality of narrow openings.

3,590,820
ASPIRATOR TIP
Samuel A. Nehra, 19980 Wedgewood, Grosse Pointe Woods, Mich.; Oscar C. Saad, 25106 Anchorage Drive, Mount Clemens, Mich., and Raymond E. LaBrecque, 11234 Irvington Drive, Warren, Mich.
Filed Feb. 6, 1969, Ser. No. 797,139
Int. Cl. A61m 1/00
U.S. Cl. 128—276 8 Claims



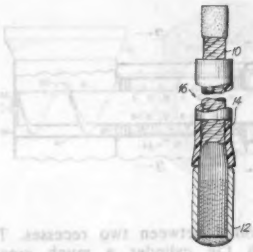
A hollow cylindrical aspirator tip closed at one end and including radially extending angularly spaced-apart primary passages extending therethrough adjacent the closed end thereof and relief passages in communication with the primary passages to prevent drawing sufficient vacuum through the hollow cylindrical tip in the primary passages to damage membranes in contact with the tip over the outer ends of the passages. The relief passages are of a smaller diameter than the primary passages to facilitate maintaining a vacuum in the primary passages at all times. Longitudinally extending slots are provided in communication with each of the relief passages having a cross section less than that of the relief passages to permit draining of fluid into the relief passages while maintaining a vacuum therein.

3,590,821
ACUPUNCTURATION DEVICE
Pietro Orlandini, Vellertri, Italy, assignor to Rotodolor s.r.l., Milan, Italy
Filed Jan. 21, 1969, Ser. No. 792,302
Claims priority, application Italy, Jan. 23, 1968, 7734B/68
Int. Cl. A61b 17/34; A61h 15/00; F16c 13/00
U.S. Cl. 128—329 2 Claims



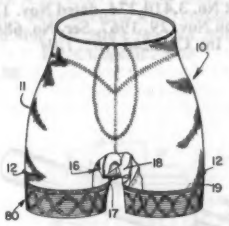
An acupuncturation device comprising a stick-shaped member having a grip portion and a free-rotating wheel, provided with a plurality of pointed teeth on its entire periphery and arranged at one end of said stick, running of said wheel on the skin of a human being having an analgesic action according to the principles of acupuncture.

3,590,822
CATHETERS
Bernard Ackerman, Metuchen, N.J., assignor to Electro-Catheter Corporation
Filed Apr. 3, 1968, Ser. No. 718,434
Int. Cl. A61n 1/04
U.S. Cl. 128—404 6 Claims



Electroconductive catheters and methods of manufacture thereof.

3,590,823
COMBINATION GIRDLE AND STOCKINGS
Henry Pope, Jr., Glencoe, Ill., assignor to Bear Brand Hosiery Co., Chicago, Ill.
Filed Apr. 19, 1968, Ser. No. 722,595
Int. Cl. A41e 1/00
U.S. Cl. 128—519 16 Claims

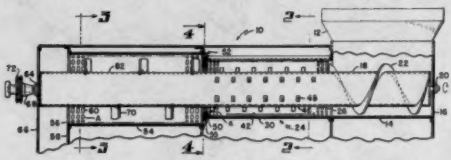


A ladies undergarment and stockings, the undergarment including stomach and buttocks surrounding portions and having downwardly directed leg portions with bottom extremities, each of the bottom extremities carrying a nonslip fabric band thereon for supporting the thigh engaging portion of a ladies stocking. Each of the nonslip fabric bands comprises a longitudinally elastic textile material having a layer of frictional material secured thereto and exposed on the outside surface of the band. Each of the stockings has a thigh engaging portion including a nonslip fabric band thereon identical to that carried by the leg portions of the undergarment, except that the frictional material is exposed on the inside of the band. The stockings are positionable so that the nonslip bands thereof overlie the corresponding nonslip bands of the undergarment, whereby the frictional material exposed on the outside surfaces of the bands of undergarment engage the frictional material exposed on the inside surface of the stockings to detachably secure the stockings to the undergarment.

3,590,824
CORN SHELLER AND SEPARATOR
Lyman J. Gunyou, Celina, and Robert A. Stelzer, Coldwater, both of, Ohio, assignors to Avco Corporation, Coldwater, Ohio
Filed Feb. 28, 1969, Ser. No. 803,393
Int. Cl. A01f 11/06
U.S. Cl. 130—6 12 Claims

The disclosure illustrates a corn sheller and separator comprising a uniform-diameter, elongated cylinder journaled for

rotation in first and second perforated cages placed end to end. Unshelled corn is received at one end of the first cage and a series of teeth projecting radially from the cylinder propel the corn through the first cage. The clearance between the teeth and the first cage is selected to promote vigorous rubbing and removal of kernels from the ear of corn. To provide even more effective removal of the kernels the first cage has a series of longitudinal recesses and a lon-



gitudinal rasp bar positioned between two recesses. The second cage forms with the cylinder a much greater clearance than the clearance for the first cage so that the remaining kernels of corn, trash and cobs are maintained in a looser mixture. A series of paddles pitched with respect to the axis of the cylinder propel the mixture in a helix pattern through the second cage so that the remaining kernels are separated from the corn.

3,590,825

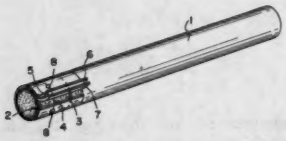
FILTER CIGARETTE HAVING APERTURED BAND

Alfred C. Davis, Westbury-on-Trym, Bristol, England, assignor to Imperial Tobacco Group Limited, Bristol, England

Continuation-in-part of application Ser. No. 435,004, Feb. 24, 1965, now Patent No. 3,410,274, dated Nov. 12, 1968. This application Nov. 29, 1967, Ser. No. 686,482

Int. Cl. A24d *1/02, 1/04*

U.S. Cl. 131—10 **6 Claims**



A cigarette, cigarillo or cigar having a tobacco portion and a stub portion, the stub portion having two sections arranged end to end to form a butt joint, and a band of impermeable material which joins the portions together and surrounds the butt joint, wherein the butt joint is completely covered and the joining band has at least one permeable area at the butt joint for controlling the entry of air at the butt joint. The permeable area of the band is thinner than the remainder of the band. The thinned area is made by shaving off a portion of the surface of the band.

3,590,826

MACHINE FOR BLENDING TOBACCO OR THE LIKE

Waldemar Wochnowski, Hamburg-Volksdorf, and Helmut Baumann, Hamburg-Bergedorf, both of, Germany, assignors to Hauni-Werke Korber & Co. KG., Hamburg-Bergedorf, Germany

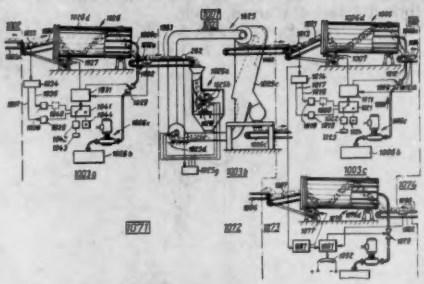
Filed May 2, 1967, Ser. No. 635,597

Claims priority, application Germany, May 4, 1966, H 59 300

Int. Cl. A24b *7/14, 9/00*

U.S. Cl. 131—21 **11 Claims**

Two or more types of tobacco are fed by separate conveyor lines into a blending unit wherein such types are mixed. One of the conveyor lines contains a measuring and control unit which measures the rate of tobacco feed and controls the rate of operation of each other conveyor line so that the ratio of tobacco types reaching the blending unit



remains within a desired range. The measuring unit can also control the operating rate of one conveyor line.

3,590,827

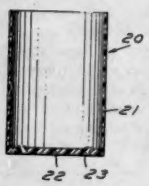
FILTRATION DEVICE FOR CIGARETTES

Peter E. Brudy, 224 California Ave.; Otto H. Brudy, 559 Askin Blvd., and Joseph E. J. Habowsky, 3015 Sandwich St. West, Apt. #505, all of Windsor, Ontario, Canada

Filed Feb. 9, 1968, Ser. No. 704,333

Int. Cl. A24f *13/04;* **A24d** *1/04*

U.S. Cl. 131—261 **4 Claims**



A cigarette comprising a filtration device interposed between the tobacco and the mouth of the user. The filtration device includes a wall of impervious material extending transversely to the general direction of movement of the tobacco smoke and a circumferential wall positioned generally rearwardly of the transverse wall. The transverse wall has a plurality of circumferentially spaced openings adjacent the circumferential wall. Each opening has its axis at an angle to the axis of the transverse wall and extending toward the circumferential wall. Each opening converges in a direction toward the circumferential wall.

3,590,828

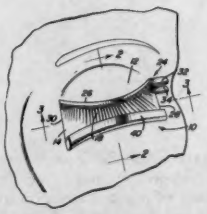
EYE GUARD AND LASH CLAMP

Era Pauline Prewitt, Route #1, Grandview, Tex.

Filed Mar. 23, 1970, Ser. No. 21,705

Int. Cl. A45d *2/48*

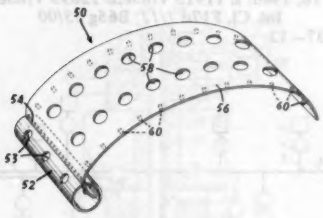
U.S. Cl. 132—32 **8 Claims**



A protective shield has an arcuate edge placed against the eyelid to support eyelashes which are held in place by a clip.

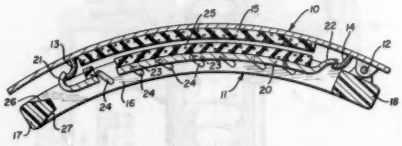
Excess cosmetic materials applied to the eyelid and/or lashes are collected within a troughlike formation on the shield spaced from the arcuate edge.

3,590,829
SELF WINDING CURLER
Vincent Parisi, 2 Cornell Place, Englishtown, N.J.
Continuation-in-part of application Ser. No. 689,610, Dec. 11, 1967, now abandoned. This application Dec. 26, 1968, Ser. No. 787,117
Int. Cl. A45d *2/18*
U.S. Cl. 132—43 9 Claims



A hair roller with which the user's hair can be wound in a bundle having the strands therein held in windings of varying pitch to give a corresponding varying degree of tension to the hair. Thus the bundle of hair is so controlled that when it is set it possesses a larger curl near the root end and a smaller tighter curl near the tip end giving better overall body to the hair and optimum control over the shaping of the critical tip end. The hair roller comprising a wrapping strip susceptible of being wound upon itself so as to facilitate the winding of the hair therewith into a bundle of hair for setting purposes. The wrapping strip is used in conjunction with a core member of generally cylindrical shape and provided for starting the first winding of the hair at a predetermined diameter. Projections are included on the wrapping strip to space each convolution into which the hair is wound from the others at windings of increasing pitch to impart varying tension to the hair and also allow axial entry of air to the rolled bundle for rapid and more complete drying of the hair. Also, access for radial entry of air to the bundle is provided for by means of suitable openings formed in both the core and wrapping strip.

3,590,830
BARRETTE
Evelyn J. Hannum, 3880 S. Hillcrest St., Denver, Colo.
Filed May 22, 1970, Ser. No. 39,622
Int. Cl. A45d *8/24*
U.S. Cl. 132—48 R 13 Claims

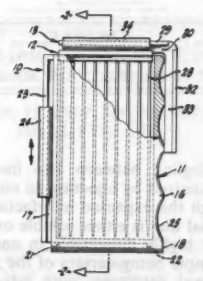


A barrette which comprises a pair of hingedly connected outer and inner body members, one of which is provided with means for grippingly, nonslidably engaging the hair of a wearer, and the other is provided with lift means, including means for manually retracting and extending the lift means relatively to the body member to permit unhindered insertion of the body member in the hair of the user and firm clamping of the hair between the body members when the lift means is extended relatively to the body member in which it is mounted.

3,590,831
ARTIFICAL HAIRPIECE
Leon J. A. Buchheit, 565 5th Ave., New York, N.Y.
Filed Jan. 2, 1968, Ser. No. 695,187
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 1 Claim

An artificial hairpiece that has a foundation with a flexible elastic crown, a back band that is resilient in the direction of its length and relatively inflexible in the direction of its width, and a front band of relatively inflexible material. Tufts of hair are attached to the outside surface of the crown, the front band and the back band. Advantageously, tufts of hair are also applied along the inner surface of the front and back bands thereby providing an artificial hairpiece that is natural in appearance and easily adaptable to fit different size heads of various users.

3,590,832
COMB AND CONTAINER ASSEMBLY
Forest Nelson, Jr., 4490 Arcadia Ave., Oakland, Calif.
Filed Mar. 12, 1969, Ser. No. 806,657
Int. Cl. A45d *24/08*
U.S. Cl. 132—136 8 Claims

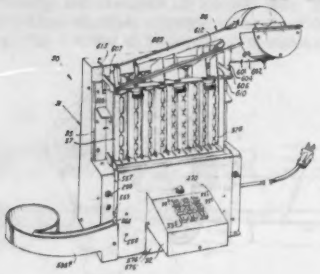


A comb and container assembly comprising a plurality of comb sections and a container having a chamber for receipt of such comb sections therein. The container is adapted to serve as a handle for any one or all of the comb sections and can be assembled therewith in a handle-forming configuration to enable the resultant comb structure to be conveniently manipulated in combing, styling, and other working of hair, especially hair that is long, thick, coarse and wiry.

3,590,833
COIN-HANDLING APPARATUS
Paul E. Walton, Orlando, Fla., assignor to SWD Machines, Inc., Dallas, Tex.
Filed Aug. 8, 1968, Ser. No. 751,282
Int. Cl. G07d *1/06*
U.S. Cl. 133—2 29 Claims

Coin sorting and dispensing apparatus which includes a coin magazine having a plurality of coin storage tubes in which coins of different denominations are receivable, each tube having individual coin-dispensing means for moving

coins from its lower end and electrically controlled means for individually controlling the operation of the dispensing means. A coin sorter is also mounted above the magazine



into which a mixture of coins of different denominations may be deposited which then moves coins of predetermined denominations to the upper ends of appropriate tubes of the magazine.

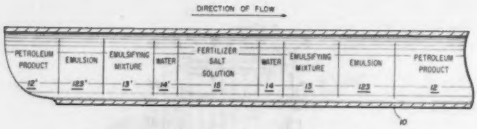
ERRATA

For Classes 134—144, 135—005, 135—026 see: Patent Nos. 3,590,863 thru 3,590,865

3,590,834
CONTROL OF COMMINGLING BETWEEN IMMISCIBLE FLUIDS IN PIPELINE TRANSPORTATION

Francis B. Henry, Tulsa, Okla., assignor to Williams Brothers Pipe Line Company, Tulsa, Okla.

Filed Oct. 4, 1968, Ser. No. 765,084
Int. Cl. F17d *1/00*
U.S. Cl. 137—1 **6 Claims**

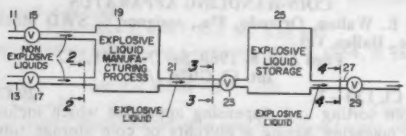


The commingling between two immiscible fluids in a pipeline is minimized by injecting an emulsion-producing detergent through the expected interfacial zone, the detergent being a material that is either soluble or highly dispersible in both fluids or highly dispersible in one and soluble in the other, an example being certain of the nonionic biodegradable alkyl phenol detergents with ester, alcohol and ether group side chains.

3,590,835
METHOD OF TRANSPORTING EXPLOSIVE LIQUIDS

Adolph B. Amster, Silver Spring, Md. Assignor to the United States of America as Represented by the Secretary of the Navy.

Filed Nov. 12, 1969, Ser. No. 875,606
Int. Cl. F17d *1/00*
U.S. Cl. 137—1 **5 Claims**

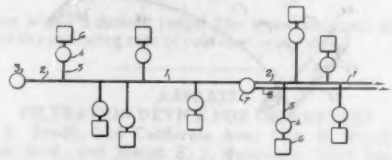


A method of transporting explosive liquids through conduits having square or rectangular cross sections and preferably through such conduits that are made from plastic or lead material. This transportation method improves the safety of transporting explosive liquids by reducing the possibility of explosion due to low velocity detonation shock waves.

3,590,836
SEWERAGE TRANSMISSION SYSTEM

Ernst Kuntze, Hamburg-Wellingsbuttel; Wilhelm Zander, Wendentorwall, and Bernd Zander, Eichenweg, all of, Germany, assignors to Firma Dr.-Ing. W. Zander, Gesellschaft fur Rein-und Abwassertechnik m.b.H., Wendentorwall, Germany

Filed Sept. 25, 1968, Ser. No. 762,524
Claims priority, application Germany, Dec. 10, 1965, Mar. 16, 1966, Z 11915 V/85e;Z 12099 V/85e
Int. Cl. F17d *1/12*; B65g *53/00*
U.S. Cl. 137—12 **8 Claims**

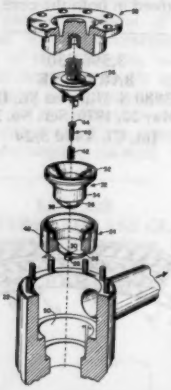


A series of controlled discharge collection stations are linked to a central sewerage transmission pipe, having a relatively small diameter, with conduits pressurized in part with air to create turbulence and minimize settlement within the pipe.

3,590,837
COMBINATION OF VALVE SEAT BASE AND REPLACEABLE VALVE SEATS, AND METHOD OF SECURING TOGETHER AND IN PLACE

Leo Jeanise, 131 Pat LeBlanc St., Schriever, La.

Filed Dec. 30, 1969, Ser. No. 862,228
Int. Cl. F16k *15/00*
U.S. Cl. 137—15 **5 Claims**



The combination of a hollow valve seat base for force fitting into a valve casing of a pump, said base having a transverse bottom structure defining a center-threaded hole, a hollow valve seat having a transverse bottom structure defining a center hole and adapted to fit into said base with center holes conforming, a bolt threaded to engage the threads of the center-threaded hole of the base through the center hole of the valve seat, and a coil spring mounted on said bolt, the spring and bolt for fastening the base and the valve seat

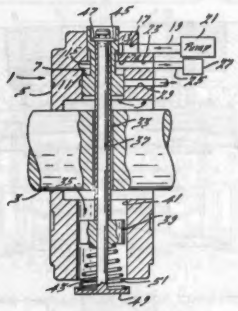
together under constant pressure of the spring compressed between the bolthead and the valve seat bottom structure, thereby preventing the loosening of the fastening.

3,590,838

SPEED-RESPONSIVE CENTRIFUGAL MASS TYPE GOVERNOR

Charles E. Brady, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 27, 1966, Ser. No. 553,518
Int. Cl. G05d *13/26*
U.S. Cl. 137—56 **3 Claims**



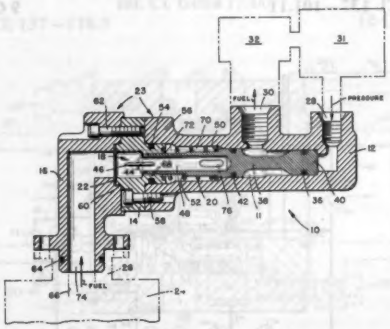
A governor mounted on a rotatable shaft including a rod extending through the rotatable shaft with a valve member on one end and a weight on the opposite end. A spring having a nonlinear low-deflection curve extends between a seat on the other end of the shaft and the weight to oppose the centrifugal force exerted on the valve in such a manner that the net centrifugal force on the valve is approximately linearly proportional to the rotational speed of the shaft.

3,590,839

INTERLOCKING SEQUENCE VALVE FOR LIQUID FUEL

Daniel M. Moore, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 31, 1968, Ser. No. 749,098
Int. Cl. F16k *17/16*
U.S. Cl. 137—71 **13 Claims**



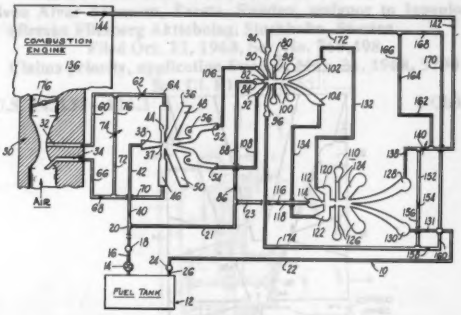
A normally closed check valve, featuring a spring-biased piston assembly, which opens and remains open only as long as a predetermined value of pressure is present at its control port. Linear motion of the piston assembly then moves an O-ring seal mounted on the piston assembly to a position where it no longer inhibits communication between the inlet and outlet ports of the check valve. A decrease in the pressure below the required value restores the piston assembly to its original position, thereby closing the check valve.

3,590,840

FLUIDIC CONTROL APPARATUS

James M. Hyer, South Bend, Ind., assignor to The Bendix Corporation

Filed May 29, 1968, Ser. No. 732,937
Int. Cl. F15c *1/14*
U.S. Cl. 137—81.5 **13 Claims**



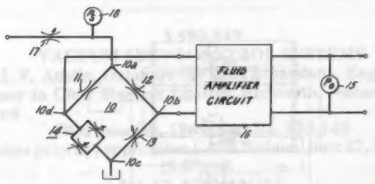
The present invention concerns a fluidic control apparatus for controlling a hydraulic output flow by means of a fluid input comprised of a fluidic amplifier means responsive to a variable fluid differential pressure input with a variable mixture control means operatively connected to said fluidic amplifier means for controlling a hydraulic output in proportion to said input differential. Further, the device may have a mixture control trimming means intermediate said variable fluid differential pressure input and said fluidic amplifier means for adjusting minimum and maximum hydraulic output flow.

3,590,841

FLUIDIC GAGING DEVICE

Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company

Filed Feb. 19, 1969, Ser. No. 800,623
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **9 Claims**



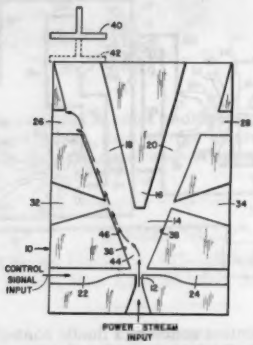
A fluidic gage having no moving mechanical parts is utilized for continuous monitoring of a particular parameter such as wire diameter, sliver density and object proximity. The gage comprises a bridge circuit including a pair of fluidic resistors having fixed resistances to fluid flow therethrough and a first fluidic variable resistor in three legs of the bridge circuit. A sensing head is connected in the fourth leg of the bridge circuit in fluid communication with the monitored material to function as a second fluidic variable resistor. The first variable resistor is preset to a predetermined resistance value corresponding to a desired value of the monitored parameter. Deviation from the desired value of the monitored parameter causes a linear change in fluid pressure at the input to the sensing head thereby causing an unbalanced condition of the bridge circuit and developing a pressurized

fluid signal which may be utilized for operating a suitable readout device or initiating a control action.

3,590,842
MEANS FOR SWITCHING WALL ATTACHMENT FLUIDIC DEVICES

Lynn G. Amos, Powell, Tenn.; Hal L. Moses, Raleigh, N.C., and Donald A. Small, Castine, Maine, assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,666
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 4 Claims

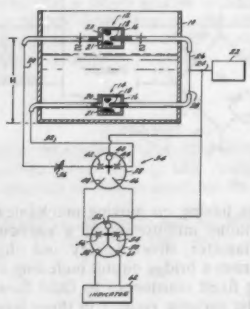


An improved bistable device having atmospheric switching ports communicating with each outlet passage and the atmosphere external to the device. The switching ports connect with the outlet passages at the ends of attachment walls upstream of vent ports, and (the switching ports) enable the output state of the device to be switched by fluid control signals whose pressures are not affected by output loading conditions.

3,590,843
MULTIPLE-JET LIQUID LEVEL DETECTOR

Arthur Stivers Meyer, West Chester, Ohio, assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,749
Int. Cl. F15c *1/14*; G01f *23/14*
U.S. Cl. 137—81.5 6 Claims

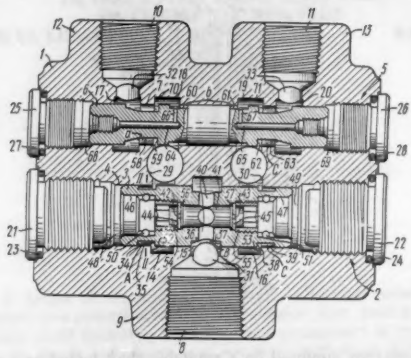


The disclosure describes a fluid level detector in which two identical fluid jet devices, each comprising a fluid jet nozzle and a receiver, are placed in a fluid container. One such device is located below the nominal fluid level in the container and the other is located at the maximum desired fluid level therein. The degree of pressure recovery in each of the receivers depends upon the presence or absence of fluid at that device, and a differential pressure sensing means to sense differences in the recovered pressures is provided to indicate presence or absence of liquid at the upper device.

3,590,844
DEVICE FOR DIVIDING THE FLOW OF LIQUID INTO TWO PARTS

Boris Yakovlevich Ladenzon, Moskovsky prospekt, 238a, kv.1, and Iosif Naumovich Dekhtyar, ulitsa Karazina 7/9, kv.49, both of Kharkov, U.S.S.R.

Filed May 7, 1969, Ser. No. 822,451
Int. Cl. G05d *11/00*
U.S. Cl. 137—101 1 Claim

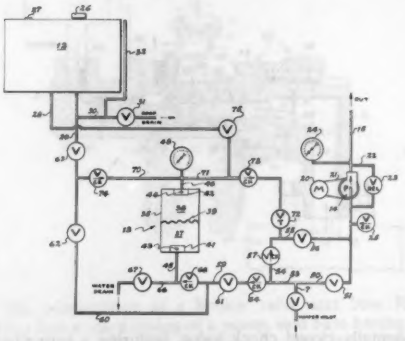


A device for dividing the flow of liquid into two parts comprises a control valve with two constant-section flow restrictors and a pair of restrictor means and another control valve with another pair of restrictor means arranged downstream of the first pair. Each restrictor means forms a variable transversal section slot whereas the outlet of each restrictor means of the first pair is connected to the inlet of one of the restrictor means of the second pair that permits division of the flow of liquid with a great accuracy under all operating conditions.

3,590,845
VEHICLE WASHING EQUIPMENT

James K. MacLean, 283 Norwood Ave., Buffalo, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,564
Int. Cl. G05d *11/13*
U.S. Cl. 137—101.11 9 Claims



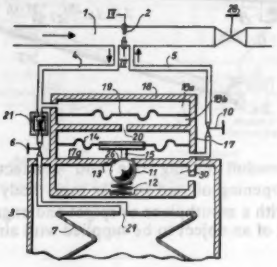
In vehicle-washing equipment having an expansion accumulator tank adapted to receive liquid additive and fluid flow means operable during successive wash and rinse cycles of the equipment to expel additive under pressure from the tank into the stream of water.

3,590,846

FLUID-PROPORTIONING DEVICE FOR ADDING A PREDETERMINED PROPORTION OF A SOLUBLE SUBSTANCE TO A FLUID IN A CONDUIT

Eugen Eisele, and Hermann Steil, both of Heilbronn, Germany, assignors to Cillichemie Ernst Vogelmann, Heilbronn, Germany

Filed May 9, 1969, Ser. No. 823,340
Claims priority, application Germany, May 17, 1968, P 17 73 459.7
Int. Cl. B01d *11/02*
U.S. Cl. 137—101.11 7 Claims



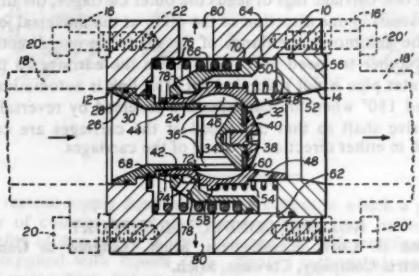
A flow-restricting passageway in the conduit diverts fluid into a bypass which leads through a tank where the additive is stored. Excess pressure in the bypass line leading from the conduit into the tank, relative to the pressure in the bypass return line leading from the tank into the conduit downstream of the flow-restricting passageway, is transmitted to a diaphragm interposed in the system. The diaphragm which is operatively connected with a flow-respondent check valve causes the latter to open, permitting fluid flow through the return path until pressure equalization in the bypass is restored. The device provides in this way for uniform concentration of the additive in the fluid returning into the conduit, regardless of fluid oscillations in the bypass caused by pressure fluctuations in the conduit.

3,590,847

CONSTRUCTION FOR IN-LINE PRESSURE CONTROL VALVE

Donald A. Worden, Pompton Plains, N.J., assignor to Marotta Valve Corporation, Boonton, N.J.

Filed Feb. 7, 1968, Ser. No. 703,651
Int. Cl. G05d *11/00*
U.S. Cl. 137—116.5 10 Claims



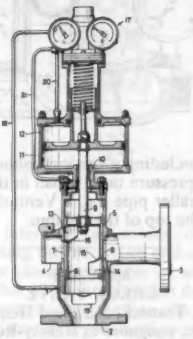
This specification discloses a flow control valve construction in which the valve element remains stationary and the seat moves. The seat is part of an annular piston or similar element which extends circumferentially around the valve element and which cooperates with the valve element to form a partition across the inside of the valve housing when the valve is closed. There is a recess in the inside wall of the piston which provides an offset in the fluid flow passage so that fluid can flow around the circumferential edge of the valve element when the seat moves away from the valve element to open the valve. The piston can be operated in response to a manual control or a pilot valve. The preferred construction is a pressure reducer with an integral relief valve. The construction provides a compact in-line valve having a diameter not substantially greater than the diameter of the fluid line for which the valve controls the flow.

3,590,848

REGULATOR FOR MAINTAINING WITHIN A RESTRICTED SPACE A CONSTANT PRESSURE WHICH IS LOWER THAN THE AMBIENT PRESSURE

Sven Alvar Svensson, Farsta, Sweden, assignor to Ingeniorsfirman Fliesberg Aktiebolag, Stockholm, Sweden

Filed Oct. 22, 1968, Ser. No. 769,498
Claims priority, application Sweden, Mar. 21, 1968, 3790
Int. Cl. F16k *31/365*
U.S. Cl. 137—116.3 1 Claim



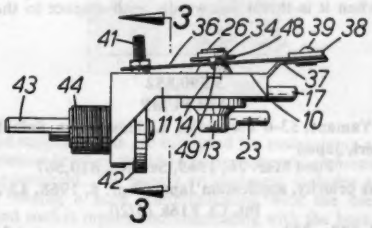
A regulator for maintaining within a restricted space a selected pressure less than ambient pressure including a valve connected between a low-pressure generating means, ambient air and the restricted space, and a valve control device operating the valve. The valve comprises a valve housing having ports communicating with the low-pressure generating means, ambient air, and the restricted space, and a hollow piston having openings which can register with the ports to varying degrees. The openings and the ports are of particular designs which enhance the smooth operation of the valve and promote precise control of the exposure of the restricted space to ambient air and the low-pressure generating means.

3,590,849

VACUUM SERVOCONTROL SYSTEMS

Levi J. F. Austin, Orton-on-the Hill, Atherstone, England, assignor to Clear Hooters Limited, Bedworth, Nuneaton, England

Filed June 20, 1969, Ser. No. 835,149
Claims priority, application Great Britain, June 22, 1968, 29,878/68
Int. Cl. F16k *31/365*
U.S. Cl. 137—116.5 3 Claims



In a vacuum modulating valve in which the pressure in an outlet chamber is controlled by a diaphragm having an axial

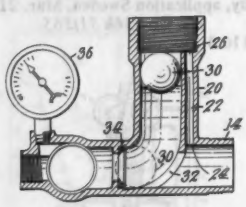
stem engaged in an opening in a blade spring anchored at one end and cooperating at its free end with a cam for adjustment, a rigid washer located on said stem between the spring and a radial flange on the extremity of the stem is connected to the spring by means permitting relative rocking movement but preventing relative displacement in a direction lengthwise of the spring.

3,590,850

TANK PRECHARGE PRESSURE CHECK VALVE

Frederick G. J. Grise, Ware Point Road, West Brookfield, Mass.

Filed Dec. 16, 1968, Ser. No. 784,029
Int. Cl. F16k *31/22, 15/04*
U.S. Cl. 137—192 **1 Claim**



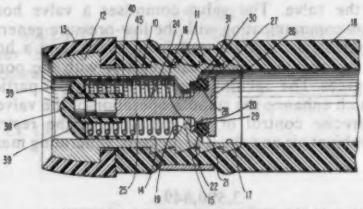
A check valve including a vertical column which is applied to the outlet of a pressure tank, a ball in the vertical column, and a separate smaller pipe e.g. a Venturi tube, which leads from the tank to the top of the column.

3,590,851

CHECK VALVE

Armen Bogossian, Teaneck, N.J., and Henry H. Mackal, Fort Lauderdale, Fla., assignors to Halkey-Roberts Corporation, Paramus, N.J.

Filed Aug. 6, 1968, Ser. No. 750,507
Int. Cl. F16k *15/20*
U.S. Cl. 137—223 **10 Claims**



A fluid check valve which may be employed, for example, as a mouth inflation valve for hollow inflatable articles. The valve has a hollow body within which an axially positioned valve element reciprocates between a forward, valve closed position, toward which it is constantly urged by a spring, and a rear, valve open position. The valve includes an improved means for guiding the forward end of the valve element within the valve body, said guiding means also serving as the seat for the forward end of the spring and for opening the valve when it is thrust rearwardly with respect to the valve body.

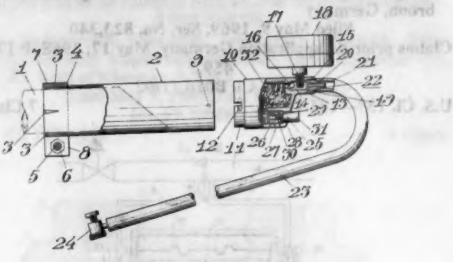
3,590,852

AIR PUMP

Kunio Yamane, 53-6 Yoshinaga, Kishimoto-cho, Saihaku-gun, Tottori, Japan

Filed Mar. 26, 1969, Ser. No. 810,567
Claims priority, application Japan, Apr. 8, 1968, 43/28551
Int. Cl. F16k *15/20*
U.S. Cl. 137—223 **3 Claims**

The present invention discloses an air pump used for utilization of exhaust gas from an automobile, wherein said air pump comprises a tubular main body having, at one end, an opening connectable directly or through a supplementary means with an exhaust pipe of an automobile and, at other end, a discharge opening provided with a check valve, and a



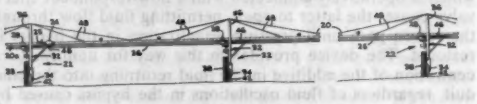
pipe or conduit having one end connectable with the discharge opening of said tubular main body and other end provided with a mouthpiece or spigot and engageable with an intake port of an object to be supplied with air.

3,590,853

IRRIGATION SYSTEM WITH DISALIGNMENT-SENSING DEVICE

Don A. Haynes, Okemos, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed Sept. 4, 1968, Ser. No. 757,238
Int. Cl. B05b *9/02;* **E01h** *3/02*
U.S. Cl. 137—344 **9 Claims**



A plurality of spaced carriages support a long irrigation pipe and move the pipe across a field. All of the carriages are driven from a long drive shaft mounted on the carriages and made up of rigid sections connected by universal joints adjacent the carriages. Power is supplied from the drive shaft to each carriage through a speed change mechanism comprising a pair of sheaves, one of which is mounted on the drive shaft. A link straddles each universal joint and has one end connected to a movable flange of the sheave on the drive shaft. When one carriage lags or leads the other carriages, the drive shaft bends in one direction or the other at the universal joint and the link moves the flange of the sheave in one direction or the other to speed up or slow down the carriage so that the water pipe is not severely bent. The link is automatically rotated 180° when the carriages are reversed by reversal of the drive shaft so that the speed of the carriages are controlled in either direction of travel of the carriages.

3,590,854

ROLLING CONDUCTOR SUPPORT

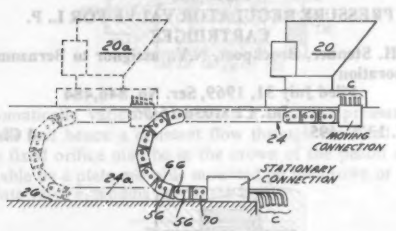
Gordon H. Cork, Birmingham, Mich., assignor to Gemco Electric Company, Clawson, Mich.

Continuation-in-part of application Ser. No. 670,646, Sept. 26, 1967, now abandoned. This application Oct. 9, 1968, Ser. No. 770,468
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.16 **28 Claims**

This disclosure relates to a rolling conductor support useful in supporting, guiding and protecting electrical, hydraulic, coolant and the like conductors extending between parts of machines which move relative to one another on guides or tracks. The conductor support comprises a plurality of paral-

lel chains connected in laterally spaced relation by conductor-supporting bridges to which the conductors are fastened by clips or retainer loops. The chains are composed of links pivotally connected at overlapping contiguous ends, with an arcuate slot in one end of each link receiving a stop pin in the overlapping contiguous end of the next link, with the length of the slots determining the bending radius of the chains.

The disclosure also encompasses two or more conductor



supports arranged in stacked relation with means for supporting one on top of the other in spaced-apart relation.

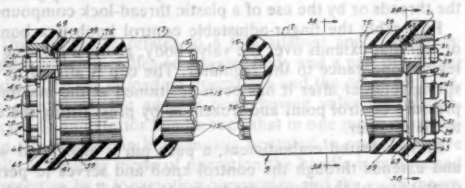
Also disclosed is a flexible, sheetlike member extending between the chains to form a protective covering for the conductors, with retention bars overlying the cover and releasably engaged with the chain links. There is further disclosed a support including cross members extending between the chains forming a platform on which an operator may stand, with the chain links formed with laterally extending flanges to which the cross members are connected.

3,590,855

REMOTE-SUPPLY LIQUID DISPENSING SYSTEM

Charles E. Woollen, Clayton, and Robert W. Boehlow, Florissant, both of, Mo., assignors to Multiplex Company, St. Louis, Mo.

Filed Apr. 1, 1969, Ser. No. 812,276
Int. Cl. F16l *39/02*
U.S. Cl. 137—375 **27 Claims**



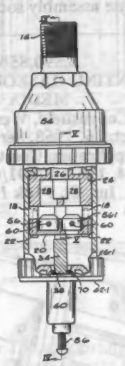
A remote-supply liquid-dispensing system in which a plurality of counter-mounted dispensing units, each having a plurality of dispensing valves for dispensing different liquids, are supplied with liquids (e.g., syrups, carbonated water, plain water, beer, hot or cold coffee, etc.) from a temperature control unit at a location remote from the dispensing units via a system of thermally insulated fittings and conduits each having a plurality of tubes therein for the respective liquids, with quick-attachable couplings between the ends of the conduits and the fittings adapted for simultaneous quick connection of all the tubes in a conduit to all the tubes in a fitting, with the tubes for the respective liquids in the conduits and fittings in proper register, also the multiple-tube conduit and fittings used in the system.

3,590,856

SINGLE ACTUATOR FOR PLURAL VALVES

Salmon Gerhardus Antonie Fritz, Ficksburg, Republic of South Africa, assignor to Neutralized Valves Proprietary Limited, Johannesburg, Republic of South Africa

Filed Mar. 31, 1970, Ser. No. 24,062
Claims priority, application South Africa, Apr. 3, 1969, 69/2390
Int. Cl. F16k *11/10*
U.S. Cl. 137—411 **10 Claims**



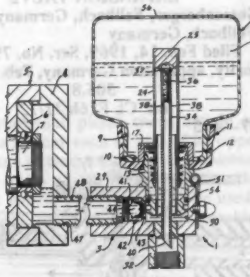
A valve having internally an axially displaceable fluid passage part presenting on the intake end at least two ports seatable on separate closure elements of which one is fixed and the other movable to a limited extent for the port of the fixed closure element to open before the other port. The passage port is displaceable by manual, mechanical or automatic means. The valve is automatically controllable by changing fluid pressure at the outlet end and provides on said end of the passage a face on which said fluid pressure reacts for application of a closing force against spring biassing applied to the passage part, while at the intake end of the passage part equal faces are presented to neutralize the supply fluid pressure on the passage part.

3,590,857

CONSTANT LEVEL LIQUID SUPPLY MEANS

Donald G. Gruett, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Filed Jan. 21, 1970, Ser. No. 4,529
Int. Cl. G05d *9/02*
U.S. Cl. 137—454 **17 Claims**



A liquid supply means are disclosed for maintaining a relatively constant level of liquid in a user assembly wherein the liquid is consumed. The supply arrangement includes a base assembly having a bore communicating with the user assembly and socket means communicating with the bore. The liquid supply is contained in a reservoir assembly having outlet means. The reservoir assembly is adapted for disposal in the base assembly socket means with the outlet means in

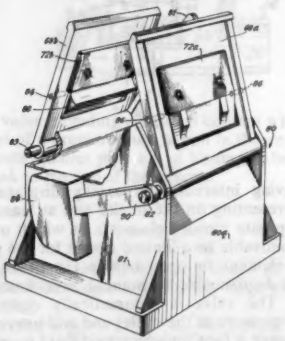
communication with the socket means and user assembly. The desired constant liquid level in the user assembly is established by the reservoir assembly outlet means. Vent means are provided for the reservoir assembly and communicates with the outlet means to vent the reservoir assembly through the outlet means to thereby restore the desired liquid level as liquid is consumed by the user assembly. The reservoir and base assemblies are each provided with valve means adapted to close when the reservoir assembly is separated from the base assembly. The respective valve means are adapted to open in response to a reassembly of the reservoir assembly into the base assembly socket means.

3,590,858

DEVICES FOR VENTING GASEOUS AND/OR VAPOROUS MEDIA

William S. Martin, Copynsfield, Westerham, Kent, England

Filed Oct. 16, 1968, Ser. No. 767,986
Claims priority, application Great Britain, Oct. 19, 1967, Nov. 14, 1967, 47601/67;51758/67
Int. Cl. F16k *17/19*
U.S. Cl. 137—493.3 **8 Claims**



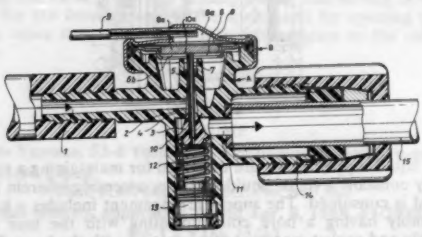
A vent device for venting a gaseous and/or vaporous medium into the atmosphere, in particular for venting such a medium from a generally enclosed liquid container when liquid is entering the container, said vent device providing a vent orifice arranged for flow therethrough of the medium being vented, and comprising means for varying the cross-sectional area of the orifice in response to the volumetric rate of flow of the medium being vented, said cross-sectional area increasing with increasing flow rate of the medium and decreasing with decreasing flow rate of the medium.

3,590,859

EXPANSION VALVE

Rudibert Gotzenberger, Fellbach, Germany, assignor to Ernst Flitsch, Fellbach, Germany

Filed Feb. 14, 1969, Ser. No. 799,299
Claims priority, application Germany, Feb. 24, 1968, P 16 75 505.8
Int. Cl. F16k *31/12*
U.S. Cl. 137—495 **3 Claims**



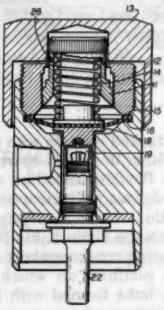
An expansion valve for controlling the flow of a fluid medium and being connected to a pressure-generating sensor has a valve housing defining a valve chamber and a valve head with a membrane therein reacting to the pressure coming from said sensor. A valve pin, connecting the membrane with the valve body of the valve for joint movement therewith, has a bore connecting the outlet end of the valve with an inner membrane chamber. The valve pin passes through a packing located between the inner membrane chamber and the valve chamber for preventing a flow of the medium from the valve chamber into the inner membrane chamber.

3,590,860

PRESSURE REGULATOR VALVE FOR L. P. CARTRIDGES

Irving H. Stenner, Brockport, N.Y., assignor to Bernzomatic Corporation

Filed July 31, 1969, Ser. No. 846,484
Int. Cl. G05d *16/06*
U.S. Cl. 137—495 **4 Claims**



A finger-adjustable pressure regulator valve for regulating and shutting off the flow of gas from a disposable propane cartridge comprises a valve body containing a spring-loaded diaphragm operating on a strand tire core valve. The diaphragm spring is held by a threaded retainer which is adjustable from a full-open position to a full-closed position by rotation thereof with a control knob.

A retainer stop is threaded to the valve body and the spring retainer is threaded therein. During assembly, the retainer stop is threaded in place sufficiently to obtain the diaphragm seal and is then frozen in position as by jamming the threads or by the use of a plastic thread-lock compound.

Preferably the finger-adjustable control knob is a bonnet or cap that extends over the valve body, giving a pleasing integral appearance to the regulator. The cap is affixed to the spring retainer after it has been positioned at the maximum pressure control point and frozen, as by press fitting the cap to the retainer.

In a preferred embodiment, a push pin is associated with and extends through the control knob and serves to permit depression of the diaphragm spring to the full-open position, regardless of the setting of the control knob. This is useful in the starting up of certain equipment, such as a space heater, which should be internally flooded with gas to secure proper ignition.

3,590,861

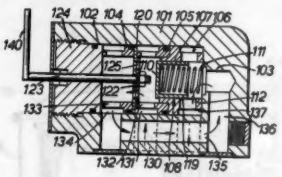
LIQUID FLOW CONTROL VALVES

George Edward Chittenden, and George Park Ferguson MacNeill, both of Coventry, England, assignors to Keelavite Hydraulics Limited

Filed July 15, 1969, Ser. No. 841,957
Claims priority, application Great Britain, May 5, 1969, 22817/69
Int. Cl. G05d *7/01*
U.S. Cl. 137—501 **5 Claims**

A pressure-compensated liquid flow metering valve which comprises, arranged in the same bore, a variable orifice af-

forded by a port obturated by the skirt of a piston biased in a direction to open the port by a spring and an adjustable fixed orifice through which hydraulic fluid from the inlet flows to the same side of the piston as the spring. Inlet pressure acts on the other side of the piston. Thus the variable orifice is



automatically varied to maintain a constant pressure drop across and hence a constant flow through the fixed orifice. The fixed orifice may be in the crown of the piston and adjustable by a plate movably mounted on the crown or may be a plate valve extending across the bore.

3,590,862

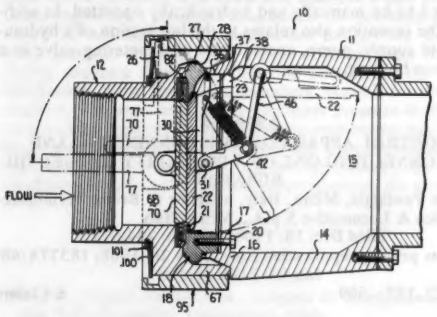
FUEL ADAPTER AND COUPLER ASSEMBLY

Paul A. De Graaf, Los Angeles, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 9, 1968, Ser. No. 782,379

Int. Cl. F16k *15/00*

U.S. Cl. 137—522 **22 Claims**



This disclosure relates to a fuel adapter and coupler assembly which includes an adapter body and a pair of coupler bodies, one for unloading operations and the other for loading operations, the adapter body having valve means connected to an exterior handle such that in one mode of operation the handle can be manually operated to open the valve while in another mode of operation the handle is maintained inoperative by a lost-motion connection and the valve means can therefore be automatically opened by the opening of a poppet valve associated with one of the coupler bodies.

3,590,863

WASHER FOR HOSPITAL AND LABORATORY GLASSWARE AND THE LIKE

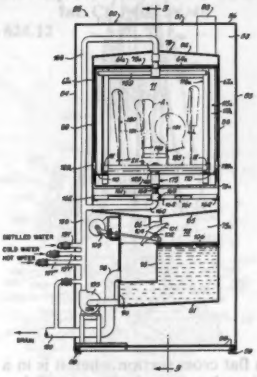
Francis S. Faust, Buffalo, and Ernest R. Edmunds, Tonawanda, both of, N.Y., assignors to Sybron Corporation

Continuation of application Ser. No. 723,332, Apr. 22, 1968, now abandoned , which is a continuation of application Ser. No. 608,702, Jan. 11, 1967, now abandoned , which is a continuation of application Ser. No. 423,962, Jan. 7, 1965, now abandoned. This application Apr. 28, 1969, Ser. No. 820,708

Int. Cl. B08b *3/02*; **B67c** *1/00*

U.S. Cl. 134—144 **13 Claims**

A washing machine for laboratory-type glassware having an improved coupler **175** FIGS. **10—14**) including an interchangeable rotary head **300** and having rails **111** adapted



to receive a rollable dolly **135** supporting a variety of holders including a spindle rack **190** and pipette holder **219**.

3,590,864

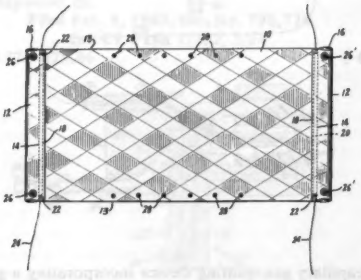
PLIANT SHEET ARTICLE

Nadeshda G. Vechesloff, 50 South Quaker Lane, West Hartford, Conn.

Filed July 25, 1969, Ser. No. 844,979

Int. Cl. E04f *10/02*; **A45f** *5/00*

U.S. Cl. 135—5 R **9 Claims**



A generally rectangular pliant sheet article has a pole-receiving channel adjacent each of two of its opposed edges, lace-receiving means adjacent each of the channels, and set of relatively small holes adjacent each of the other two opposed edges of the sheet. The article may be used with laces as a stolelike garment or it may be used in combination with pole elements as a flag, a handbag or a canopy assembly.

3,590,865

FLAT UMBRELLA

Manfred Bremshey, Mount Royal, Quebec, Canada, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Oct. 24, 1968, Ser. No. 770,349

Int. Cl. A45b *19/06*

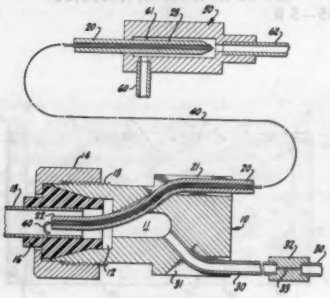
U.S. Cl. 135—26 **16 Claims**

The umbrella has a telescopic stick and shortenable dome

ribs. The crown and runners are relatively narrow and give

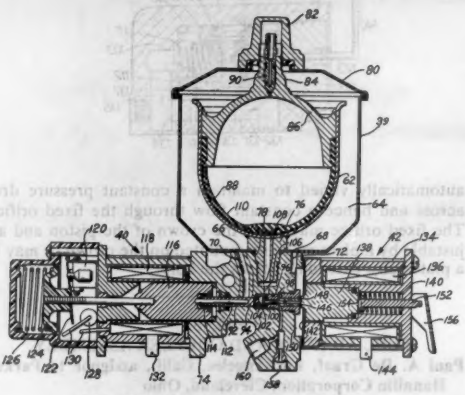
the umbrella a flat cross section when it is in a stowed condition, but circular when in an erected condition.

3,590,866
CAPILLARY GAS SPLITTING DEVICE
Robert G. Brownlee, East Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Sept. 10, 1969, Ser. No. 856,713
Int. Cl. F15b *21/04*
U.S. Cl. 137—561 **3 Claims**



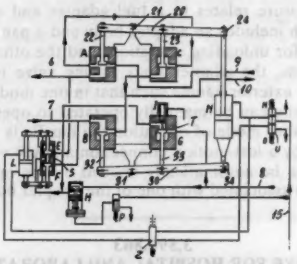
A capillary gas-splitting device incorporating a gas-receiving fitting provided at one end with a cylindrical bore and, leading therefrom, a pair of gas outlet tubes between which the entrant gas is split in a ratio which remains constant despite varying gas inlet pressures and flow rates. The first of said tubes incorporates a relatively short section of capillary tubing at any position along its length, and it opens into the bore adjacent the bottom thereof. The second of said tubes is of capillary size and extends into the bore with its extremity running axially thereof for opening against the incoming gas. Though admitted under pressure, the gas is discharged from each tube at atmospheric pressure, and the ratio of the flow rate of incoming gas passing through the one tube as compared with that through the other is directly proportional to the respective capillary lengths in the two tubes. The capillary tube is adapted at its gas-entrant end to receive lengths of wire of extremely small diameter whereby the split ratio of gases passing through the two tubes may be changed as desired. The exit end of the capillary tube may be provided with a fitting adapted to receive nitrogen or other inert gases and to discharge the same in an annular fashion about the end of the capillary tube for even mixing with the gas stream discharged therefrom.

3,590,867
ELECTROHYDRAULIC CONTROL MEANS
George M. Tam, St. Joseph, Mich., and Franklin O. Wisman, Chambersburg, Pa., assignors to The Bendix Corporation
Filed Dec. 27, 1968, Ser. No. 787,416
Int. Cl. F04b *11/00*; B60t *13/14*
U.S. Cl. 137—568 **17 Claims**



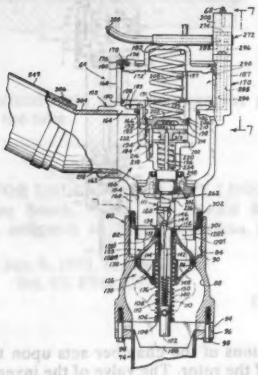
This invention relates to an electrohydraulic system having a controller means which can be regulated to provide a substantially level current for controlling a hydraulic pressure boost and metering valve apparatus which controller is adapted to be manually and hydraulically operated. In addition, the invention also relates to the integration of a hydraulic fluid supply, pump, accumulator and metering valve in a common housing.

3,590,868
CONTROL APPARATUS FOR CONNECTING AND DISCONNECTING ONE OF A PLURALITY OF FUEL OIL BURNERS
Enrico Pontiggia, Milan, Italy, assignor to Breda Termomeccanica & Locomotive S.p.A.,, Milan, Italy
Filed Dec. 18, 1968, Ser. No. 784,579
Claims priority, application Italy, June 28, 1968, 18377A/68
Int. Cl. F16k *31/163*
U.S. Cl. 137—609 **6 Claims**



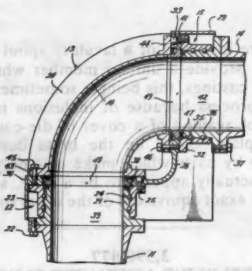
A control apparatus for connecting and disconnecting one of a plurality of fuel oil burners comprising: a plurality of simple seating plug valves A, B, C, G connected respectively in the oil delivery, oil return, and recirculating pipes and in the cooling and scavenging fluid delivery pipe, wherein the fluid pressure cooperates, when the valves are closed, in exerting the sealing pressure on the valve seating. A pneumatic or hydraulic servomotor operated by a single pilot slide valve simultaneously controls all the valves, including valve means provided to intercept the scavenging and cooling fluid of the burner, through lever systems.

3,590,869
PRESSURE-FLUID-ASSISTED APPARATUS FOR DISCONNECTABLY COUPLING A PAIR OF CONDUITS
Carl V. Von Linsowe, 2820 Julio Ave., San Jose, Calif.
Filed June 11, 1969, Ser. No. 832,161
Int. Cl. F16l *29/00*
U.S. Cl. 137—614.03 16 Claims



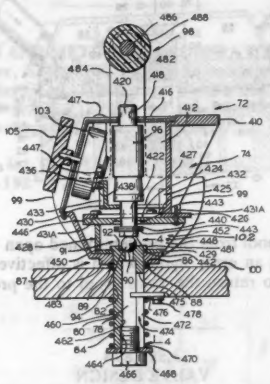
Apparatus employing pressure fluid assistance for disconnectably coupling a pair of conduits, one of which contains fluid under pressure. The apparatus includes a pair of interconnectable body members attached to the conduits, a pressure-fluid-actuated driver mechanism for driving the two body menbers together, and a fluid communicator for supplying pressure fluid from the one conduit to the driver mechanism with the body members moved toward one another. The apparatus further includes pressure-fluid-actuated locking mechanism which, during interconnecting of the body members, receives fluid from the fluid communicator, and locks the body members against separation prior to the establishment of fluid communication between the two conduits.

3,590,870
LOADING ARM
Albert A. Ashton, Dallas, Tex., assignor to Youngstown Sheet ahd Tube Company, Youngstown, Ohio
Filed Nov. 26, 1969, Ser. No. 880,195
Int. Cl. B67d *5/06*
U.S. Cl. 137—615 15 Claims



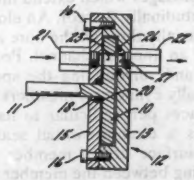
This patent discloses a loading arm in which packing in the swivel joints at the upper end of the riser pipe and at the innermost end of the inner arm may be readily and easily changed or serviced without disassembly of either swivel joint.

3,590,871
COMBINATION SAFETY AND MANUAL RELEASE VALVE
Winston L. Shelton, Jeffersontown, Ky., assignor to Mies Filter Products, Incorporated
Filed May 14, 1969, Ser. No. 824,431
Int. Cl. F16k *31/48*
U.S. Cl. 137—624.12 11 Claims



The disclosure relates to a relief valve arrangement for vessels operating under pressure including a weighted ball valve arrangement that opens when pressure exceeds a predetermined amount, or when actuated by a timer mechanism, a spring action valve that opens when pressure exceeds a higher predetermined amount, and a swing or rocker lever arrangement for manually opening the spring action valve to vent the pressure to atmosphere.

3,590,872
ROTARY VALVE
Andrew J. Baity, Elmhurst, Ill., assignor to J. E. Watkins Co.,, Maywood, Ill.
Filed Feb. 5, 1969, Ser. No. 796,728
Int. Cl. F16k *11/02, 5/14*
U.S. Cl. 137—625.46 5 Claims

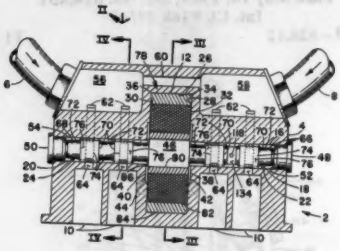


A rotary valve is described in which a disc control member having a confined flow passage is rotatable within a housing to bring the flow passage into alignment with an inlet and an outlet opening on opposite sides of the housing. The outlet opening is sealed against leakage by an elastomeric ring seated in an annular recess surrounding the outlet opening and facing the disc control member. As an alternative, an additional outlet opening is provided away from the axis of the inlet opening, and the disc control member is provided with a passage communicating therebetween.

3,590,873
VALVE MECHANISM
Billy E. Duff, Richardson, and Joe D. Usry, Arlington, both of, Tex., assignors to LTV Electrosystems, Inc., Greenville, Tex.
Filed July 26, 1968, Ser. No. 748,013
Int. Cl. F16k *31/04*
U.S. Cl. 137—625.46 9 Claims

A valve mechanism for regulating the flow of fluid including a valve body having a chamber with a movable valve

spool disposed therein. A valve actuator is operatively connected to the valve spool for moving the valve spool between a closed position and a predetermined open position. A control system is provided which is operable to detect movement

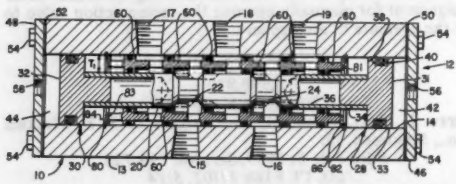


of the valve spool from the predetermined open position and for generating an error signal which is effective to energize the actuator to return the valve spool to the predetermined open position.

3,590,874
VALVE DESIGN

David Y. Rice, Cleveland, Ohio, assignor to David Y. Rice Co., Cleveland, Ohio

Filed Nov. 21, 1969, Ser. No. 878,752
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.48 **7 Claims**



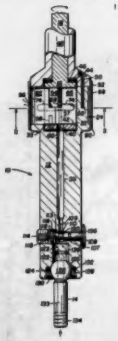
A valve comprising a body having a circular bore and a plurality of fluid passages which extend into the bore at positions spaced longitudinally thereof. An elongated valve spool member extends axially through the bore and in combination therewith defines an annular channel. Positioned within the annular channel and surrounding the spool member are a plurality of generally cylindrical members each of which terminates in end faces perpendicular to its axis. Each of the members includes a circumferential seal ring that extend about the outer surface of the member substantially at its midplane for sealing between the member and the wall of the bore. The members also have a seal ring positioned about their inner surface for sealing between the member and the spool. Additionally, flow passages are formed through the cylindrical members on opposite sides of the seal rings.

3,590,875
AIR MOTOR VALVE

Oren V. Northcutt, Box 176, Point, Tex.

Division of Ser. No. 639,767, May 19, 1967, Pat. No. 3,498,186. This application Dec. 8, 1969, Ser. No. 882,903
Int. Cl. F16k *11/14*
U.S. Cl. 137—630.14 **1 Claim**

An air motor including an outer casing having a three-lobed chamber defined in one end thereof which rotatably receives a cylindrical rotor. Air under pressure is fed through a suitable inlet into one end of the chamber. Two pairs of perpendicularly disposed vanes are slidably disposed in slots in the rotor and radially extend from the rotor into unoccupied outer portions of the three-lobed chamber. The vanes have relieved portions along the sides thereof to provide, along with the slots in the rotor, communication between the air inlet and the outer portions of the three-lobed chamber. Passage of air under pressure through the air inlet into the

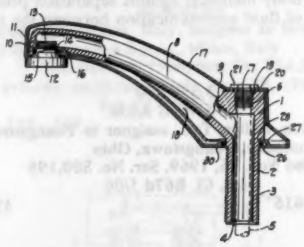


outer portions of the chamber acts upon the vanes to cause rotation of the rotor. The valve of the invention is included in the outer casing to vary the passage of air in order to control the rotation speed of the rotor.

3,590,876
LAVATORY SPOUT CONSTRUCTION

Stephen A. Young, c/o Stephen A. Young Corp., Flora, Ind.

Filed Jan. 9, 1970, Ser. No. 1,682
Int. Cl. F16k *27/12*; F16l *7/00*
U.S. Cl. 137—801 **4 Claims**



The disclosure herein is of a lavatory spout of composite construction to provide a unitary member which eliminates plating of brass castings, this being a sometimes difficult and unsatisfactory process because of inclusions in the casting, the spout hereof availing of a cover of die-cast parts which are easier to plate, cover up the brass casting, and are secured thereto by parts which make assembly feasible and produce what actually appears to be a solid, single member functionally the exact equivalent of the usual spout.

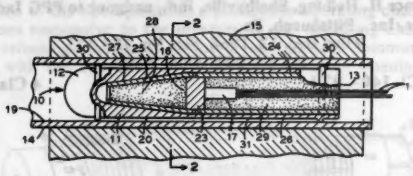
3,590,877
EXPLOSIVE-ACTIVATED PLUG

Phillip M. Leopold, Alliance, Ohio, and Louis A. Sturiale, Irwin, Pa., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Sept. 20, 1968, Ser. No. 761,273
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **4 Claims**

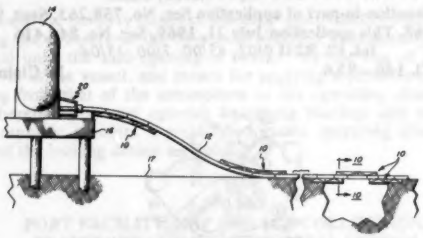
A plug which can be inserted into a tube and containing a

shaped explosive charge which is detonated to expand the plug against the surrounding tube surface with an impact that



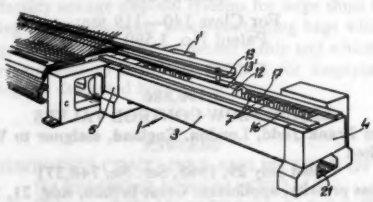
effects a circumferential weld bond between the plug and tube surface to seal the tube.

3,590,878
SUPPORT FOR UNDERWATER PIPE LINES
Walter Brown, Long Beach, Calif., and Donald E. Smith, Nashville, Tenn., assignors to North American Rockwell Corporation
Filed Jan. 8, 1970, Ser. No. 1,493
Int. Cl. F16l *3/02*
U.S. Cl. 138—106 **11 Claims**



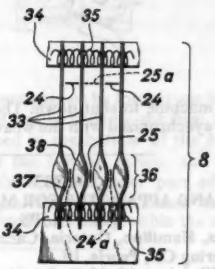
This invention relates to a stiffener assembly for controlling the bend of a pipe or pipe bundle in areas where large bending moments are expected. A plurality of stiffeners are secured along the length of pipe in an end-to-end relationship and in such a manner as to allow the pipe to deflect to a point where the bending stress is still below its yield point.

3,590,879
DRIVING DEVICE FOR THE WEFT INSERTERS OF WEAVING MACHINES WITH A FIXED WEFT SUPPLY
Jose Bassa Basart, Calle Bailen, 150, Barcelona, Spain
Filed Aug. 29, 1969, Ser. No. 854,061
Claims priority, application Spain, Aug. 29, 1968, 357,882
Int. Cl. D03d *47/00*
U.S. Cl. 139—123 **6 Claims**



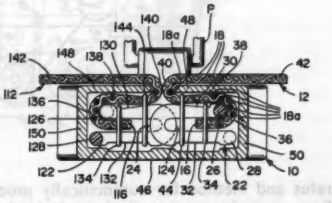
A device for driving inserters of weft threads on fixed weft reserve looms having a rigid inserting element wherein electromagnetic organs made up of a rectilinear and horizontal stator, a mobile part carrying the inserter elements and a control element drive the inserters. The mobile part is preferably a grooved core of magnetic material having copper sheets placed in the grooves to form an armature so that the mobile part functions similarly to the rotor of an induction motor and carries one or two rigid inserter elements which are provided on their free ends with clamps or clips to catch the weft threads.

3,590,880
APPARATUS AND METHOD FOR OPERATING A LOOM
Josef Kathriner, Kollbrunn, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Jan. 17, 1969, Ser. No. 792,003
Claims priority, application Switzerland, Jan. 19, 1968, 895/68
Int. Cl. D03d *49/62*; **D03c** *9/02*
U.S. Cl. 139—192 **15 Claims**



The ribbonlike warps in the bottom of the shed are inclined to the horizontal so as to permit clearance for the shuttle guide elements during return of the reed from the beat-up position. These warps are caused to twist out of the horizontal by the droppers in the reed, comb or healds.

3,590,881
SLIDE FASTENER CARRIER TAPE
William F. Van Amburg, Meadville, Pa., assignor to Textron Inc.
Filed Oct. 22, 1969, Ser. No. 868,542
Int. Cl. A44b *19/00*
U.S. Cl. 139—384 **11 Claims**

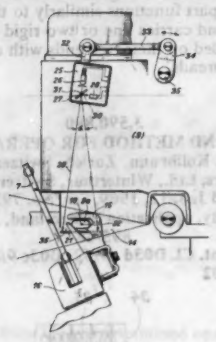


A slide fastener including a folded carrier tape having warp threads at the folded portions made of a synthetic, self-lubricating material such that the carrier tape resists wear at the folded portions and the movement of a slider along the folded portions is facilitated.

3,590,882
OPTICAL WEFT STOP MOTION FOR A WEAVING MACHINE
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd.,, Winterthur, Switzerland
Filed Apr. 23, 1969, Ser. No. 818,636
Claims priority, application Switzerland, Apr. 26, 1968, 6295/68
Int. Cl. D03d *51/34*
U.S. Cl. 139—370 **10 Claims**

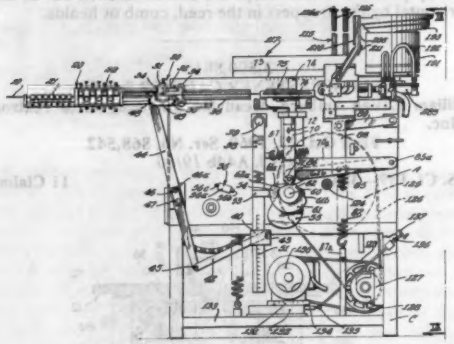
The beam is caused to move through an angle to cover the area in which a weft yarn may be displaced. Detection of a

weft yarn in this area allows continued operation of the weaving machine whereas absence of the weft yarn causes



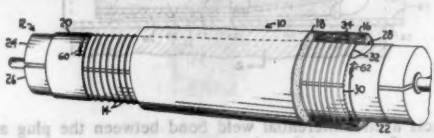
the weaving machine to shut down. The means to move the light beam is synchronized with the weaving machine drive.

3,590,883
METHOD AND APPARATUS FOR MANUFACTURE OF WIRE CLIPS
Josef K. Kihs, Hamilton, Ontario, Canada, assignor to Rohn Manufacturing Co., Peoria, Ill.
Filed Apr. 16, 1969, Ser. No. 816,716
Int. Cl. B21f *45/16*
U.S. Cl. 140—1 **22 Claims**



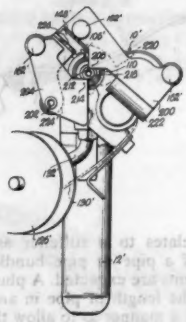
Apparatus and method for automatically producing bent wire clips comprises a vertical and horizontal wire straightener which receives and straightens a continuous length of wire, a hitch feed assembly through which the wire passes and which is adjustable to measure and intermittently feed the exact length of wire required for the various sized clips, a wire cutoff assembly, a wire-forming means and a grommet inserting means. As the wire piece is cut off from a length of continuous wire it is gripped by a pair of upper and lower coacting pressure plates which clamp a central portion of the wire piece and secure it during formation of the clip ends. To form a spiral end standoff clip that may be snapped on a cylindrical pole the wire forming means comprises a rotating and laterally movable spiral twist winder which forms the one end of the wire piece about a twist wind arbor while a grommet hook has been formed on the forward end of the wire piece. An insulating grommet may be supplied by a feed system and pushed into the grommet hook by a synchronized air ram. The upper and lower pressure plates now release the finished product and the same is blown off the spiral twist winder onto an extension arm from which it may be counted and packaged.

3,590,884
EVEN WIRE WRAP FOR FLEXIBLE DUCT CONSTRUCTION
Clarence H. Helbing, Shelbyville, Ind., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 12, 1968, Ser. No. 783,273
Int. Cl. B21f *3/00, 3/02*
U.S. Cl. 140—92.1 **4 Claims**



As assembly for fabricating flexible insulated duct on a mandrel wherein wire is wrapped about the mandrel and onto a connector member, and in which the mandrel is provided with means coacting with an edge of the connector member to prevent wire from building up in successive side-by-side and/or overlapping wraps before being wrapped onto the connector member.

3,590,885
TOOL FOR TYING WIRE
James E. Ward, 984 Seco St., Pasadena, Calif.
Continuation-in-part of application Ser. No. 758,263, Sept. 9, 1968. This application July 31, 1969, Ser. No. 846,416
Int. Cl. B21f *9/02, 45/00, 7/00, 15/04*
U.S. Cl. 140—93.6 **10 Claims**



A handtool for wire tying of reinforcing bars or the like is equipped with means to avoid bunching or piling of the convolutions of the tie on top of one another. Shiftable, spring-loaded plates on one end of the body of the tool are shifted by the ends of the wire loop during twisting such as to move the body away from the bars and leave sufficient clearance for the formation of an elongated tie with the convolutions wound spirally in side-by-side relationship, closely resembling a plier-made twist.

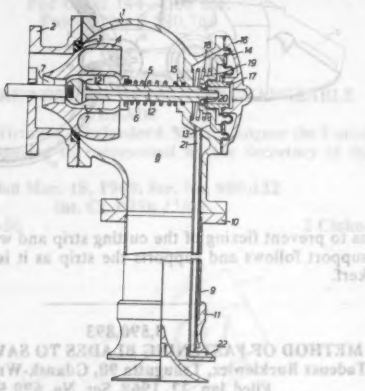
ERRATUM

For Class 140—119 see:
Patent No. 3,590,391

3,590,886
LIQUID FLOW CONTROL VALVES
William Frank Judd, London, England, assignor to Whessoe Limited
Filed July 29, 1968, Ser. No. 748,371
Claims priority, application Great Britain, Aug. 21, 1967, Sept. 4, 1967, 38428/67;40341/67
Int. Cl. B67d *5/04*
U.S. Cl. 141—198 **7 Claims**

This invention is concerned with means for controlling the flow of liquid through a drop pipe into a vessel comprising a valve movable between a closed position in which the liquid

can flow at a limited rate only and an open position in which the liquid can flow at a higher rate, a releasable locking device normally preventing movement of the valve from the closed to the open position, a pneumatic operating chamber, means responsive to the pressure in the operating chamber for releasing the locking device, a relief passage communicating with the operating chamber and having an opening adjacent the delivery outlet of the drop pipe, thereby maintaining the pressure in the operating chamber substantially normal until the said opening is blocked by the rise of liquid level in the vessel, and means for applying a pressure differing from that of the atmosphere to the operating chamber, whereby upon said opening becoming blocked said nonatmospheric pressure is established in the operating chamber and the locking device is released.



3,590,887

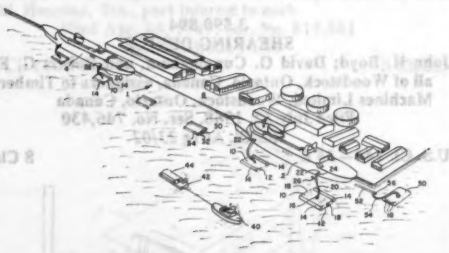
PORT FACILITY SHIP SEWAGE COLLECTION, TRANSPORTATION AND DISPOSAL SYSTEM

Harold G. Quase, Potomac, Md., assignor to Underwater Storage, Inc., Washington, D.C.

Continuation-in-part of application Ser. No. 710,084, Mar. 4, 1968, now Patent No. 3,528,462. This application Feb. 7, 1969, Ser. No. 797,601

Int. Cl. E03f *1/00*

U.S. Cl. 141—1 **15 Claims**



Port facility sewage disposal systems for large ships in port employing large collapsible waste-containing bags which are submergable and anchorable adjacent a ship and which when filled are towable to a remote location for emptying and processing are described herein.

3,590,888

COMPOSITE CONTAINER AND METHOD OF HANDLING FLUENT MATERIALS

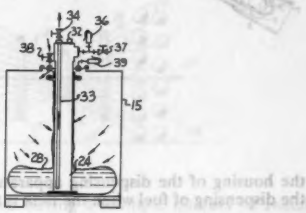
Clarence B. Coleman, 2401 Merced St., San Leandro, Calif.

Filed Dec. 5, 1966, Ser. No. 599,070

Int. Cl. B65b *3/00*; B65d *25/14*; B67c *3/00*

U.S. Cl. 141—5 **15 Claims**

A composite container is assembled by introducing a flexible bag, in collapsed condition, into a rigid shell through an opening therein and distending the bag for all-around support by the shell by injecting inflation gas through a multipassage conduit extending through the shell and bag openings; fluent material to be confined is thereafter admitted to the bag while simultaneously exhausting displaced gas through the same conduit means. The material can be discharged through the nozzle means by pumping or by forcing gas into the space between the shell and bag to collapse the bag; or a separate opening can be formed in the bottom of the bag. The two passages may end at the conduit means, and at least one communicates directly with an upper part of the bag to discharge displaced gas. The conduit means has a plate or bar to position the bottom of the bag within the shell.



3,590,889

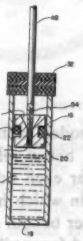
INJECTOR FILLING APPARATUS

Tom H. Vannus, Pomona, Calif., assignor to Hamilton Company, Whittier, Calif.

Filed Apr. 15, 1969, Ser. No. 816,352

Int. Cl. B01z *3/00*

U.S. Cl. 141—18 **5 Claims**



Apparatus for filling at least the needles of injector devices or syringes by pressure. A vial having a fluid sample therein has means for putting the sample under substantial pressure for forcing same into an injection device.

3,590,890

NOZZLE FOR LIQUID-FUEL-DISPENSING APPARATUS

Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

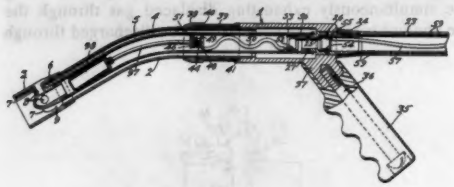
Continuation-in-part of application Ser. No. 746,165, July 19, 1968, now abandoned. This application Feb. 3, 1969, Ser. No. 796,003

Int. Cl. B67d *5/373*

U.S. Cl. 141—192 **7 Claims**

A nozzle, for use with liquid-fuel-dispensing apparatus employing a liquid fuel pump, carries electrical control means which permits the pump to be energized only when the nozzle is properly inserted into the metallic fill pipe of a fuel

tank. Automatic shutoff means, associated with a return vapor line extending from the fuel tank to a vacuum pump in



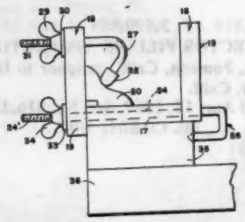
the housing of the dispensing apparatus, is provided to stop the dispensing of fuel when the tank is full.

3,590,891

EASILY ANCHORED MITRE BOXES

John Guglielmo, No. 64 Valley View Drive, Yonkers, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,311
Int. Cl. B27b *21/00*
U.S. Cl. 143—86 **11 Claims**



A channel-form wooden mitre box whose front wall member extends a bit below resting surface, has front-to-back through-holes near each side end passing through the bottom wall member, in which holes are slidable, rotatable shanks carrying a washer behind a wingnut at their threaded front ends which extend forwardly of the box structure, and said shanks are bent at their rearwardly extending ends to provide lateral extensions, which may be straight pieces or hook-forms. The downward extension of the front wall member and said rear lateral extensions of the shanks, serve as the jaws of a clamp, upon tightening the wingnuts. For the straight pieces, a tabletop is provided with two spaced holes to receive them. For the hook-forms, a wooden block is secured atop a table or two nails are driven into the tabletop in spaced relation, for the hooks to engage.

3,590,892

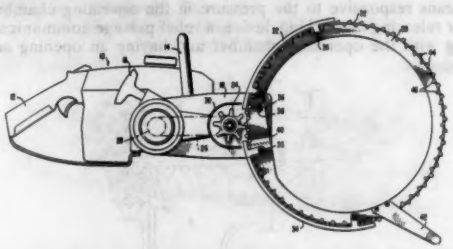
POWER-DRIVEN CONTINUOUS CUTTING STRIP AND METHOD OF UTILIZATION THEREOF

Jack W. Ehlen, Torrance, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Division of Ser. No. 605,371, Dec. 28, 1966, Pat. No. 3,468,351.
This application Aug. 6, 1969, Ser. No. 848,049
Int. Cl. B27b *33/06, 1/00*
U.S. Cl. 143—133 **4 Claims**

A flexible cutting strip including stabilizing portions operable to slidably engage a ringlike base and cutting teeth formed integrally with one base.

A method of cutting wherein a flexible cutting strip is constrained to follow a circular and continuous cutting path so



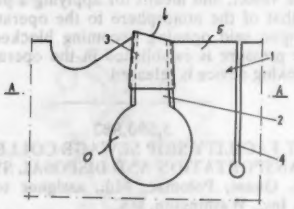
as to prevent flexing of the cutting strip and where a circular support follows and supports the strip as it is moved into a kerf.

3,590,893

METHOD OF FASTENING BLADES TO SAWING TOOLS

Tadeusz Burkiewicz, Traugutta 90, Gdansk-Wrzeszcz, Poland

Filed Jan. 22, 1968, Ser. No. 699,552
Claims priority, application Poland, Jan. 21, 1967, 118,629
Int. Cl. B27b *33/12*
U.S. Cl. 143—145 **7 Claims**



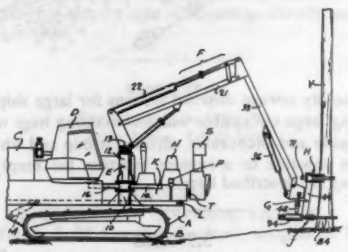
A saw blade having cutting bodies wedged in resilient seats in a blade body with the cutting edges of the cutting bodies protruding from the blade body.

3,590,894

SHEARING DEVICE

John H. Boyd; David O. Cunningham, and Robert G. Elms, all of Woodstock, Ontario, Canada, assignors to Timberjack Machines Limited, Woodstock, Ontario, Canada

Filed July 22, 1968, Ser. No. 746,430
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **8 Claims**



A shearing device having a pair of relatively pivotal, coplanar blades for use in cutting through a tree. To counteract the "squeezing out" effect of forcefully closing the blades these are formed by taking a steel plate, cutting it down the center and then forming sharpened edges on it. Prior to these steps the plate is formed in both surfaces with

a shallow spherical concavity so that the resultant blades have tapers extending along their edges towards a midpoint. In operation these tapers tend to center the object being cut about such midpoint.

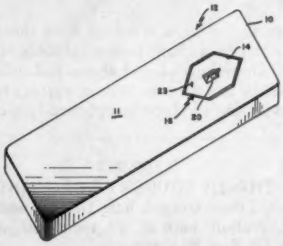
ERRATUM

For Class 144—300 see:
Patent No. 3,590,768

3,590,895
OFFSET SCREWDRIVER WITH INTERCHANGEABLE HEADS

Theodore E. Wirtanen, Chelmsford, Mass., assignor the United States of America as represented by the Secretary of the Air Force.

Filed Mar. 18, 1969, Ser. No. 808,122
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 2 Claims

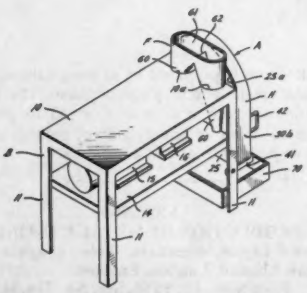


A flat bar having an extended flat surface is recessed adjacent one of its ends to receive any one of a plurality of screwdriver heads of complementary configuration. The configuration is preferably a regular hexagon having vertical walls. Some of the walls of the recess are provided with springs which are adapted to mesh with recesses present in all of the walls of each head so that each head is capable of a multiplicity of angular positions. Each head is provided with a differently designed screwdriver tip.

3,590,896
APPARATUS FOR SHREDDING OR CUTTING HEADS OF LETTUCE, CABBAGE AND THE LIKE

Halbert R. Hill, and Garfield C. Siverson, both of Harris County, Tex., assignors to Moore & Stephenson, by said Hill, Houston, Tex., part interest to each

Filed Apr. 14, 1969, Ser. No. 815,961
Int. Cl. B02c *18/06*
U.S. Cl. 146—114 8 Claims

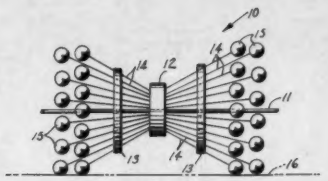


An apparatus for cutting or shredding cabbage, lettuce and the like to make salads, slaw and similar items, wherein means is provided for a self-feeding of the heads to a rotating cutter blade to thereby eliminate hand or pusher feeding of such heads. The rotating cutter is mounted for rotation in a vertical plane and is disposed so that it is readily accessible for a rapid and thorough cleaning without requiring removal of the cutter or any disassembly thereof.

3,590,897
SPIDER WHEEL

Edwin C. Bragdon, 5445 Val Verde St., Houston, Tex.

Filed Oct. 21, 1969, Ser. No. 868,042
Int. Cl. B60b *9/04*; B62d *57/00*
U.S. Cl. 152—12 2 Claims

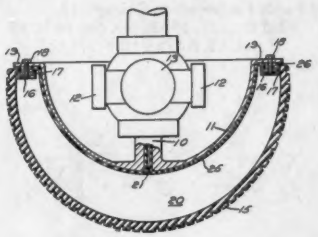


A soft resilient wheel having a multiple number of radial elements of springing material in order to cushion a vehicle and also properly support the vehicle upon various types of surfaces.

3,590,898
WHEEL AND TIRE HAVING HEMISPHERICAL SHAPE

Erling P. Toennesen, 102 Ruggles Ave., Newport, R.I.

Filed May 26, 1969, Ser. No. 827,678
Int. Cl. B60c *3/00*
U.S. Cl. 152—352 9 Claims



A hemispherical driving element for use with the mechanism shown in U.S. Pat. No. 3,364,874 and comprising a hemispherical rim with a hemispherical tire encasing the rim and means to attach the tire thereto, the tire being spaced from the rim by some cushioning means such as foam cells or air under pressure or both. A driving means is attached to the element and means are provided for moving the driving means and element from a position with its axis of rotation perpendicular to the surface engaged by the element to positions at angles to the perpendicular for driving the vehicle by contacting the tire along a circle spaced from the axis of rotation. Deflation of the tire may assist in more compactly housing the element in a recess in the fuselage of an airplane or the like.

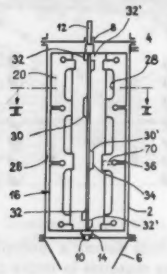
3,590,899
ROTOR CONSTRUCTION OF THIN FILM TREATMENT APPARATUS

Adolf Ulrich Liechti, Muri, and Ulrich Kaspar Zbinden, Zurich, both of, Switzerland, assignors to Luwa Ag.

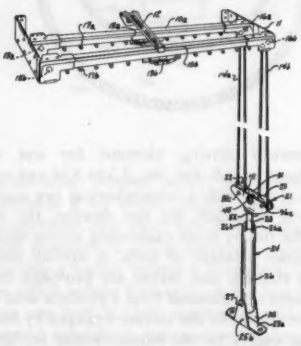
Filed Aug. 29, 1969, Ser. No. 854,150
Claims priority, application Switzerland, Sept. 11, 1968, 13,603/68
Int. Cl. B01d *1/22*
U.S. Cl. 159—6 W 12 Claims

There is disclosed a rotor for a thin film treatment apparatus which incorporates a central tubular body and a number of axially and radially extending rotor blades arranged about the periphery thereof. The edges of the rotor blades confronting the tubular body possess connection ton-

gues, or equivalent structure, which are connected, for instance by welding, with the surface of the tubular body. According to an important aspect of the invention at least a part of the connection tongues, externally of the planes containing the side surfaces of the associated rotor blades are connected with the tubular body, and further, the rotor blades exhibit invented spaces arranged spaced from one another in the lengthwise direction. More specifically, these indented spaces extend centripetally over a portion of the radial width of the associated rotor blade from the lengthwise extending edge of such rotor blade facing away from the tubular body.



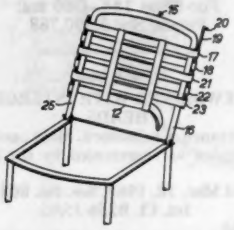
3,590,900
CORD TENSION PULLEY ASSEMBLY
Ferdinand F. Salzmann, Madison, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.
Filed Oct. 17, 1969, Ser. No. 867,295
Int. Cl. A47h *11/06, 5/032*
U.S. Cl. 160—126 **9 Claims**



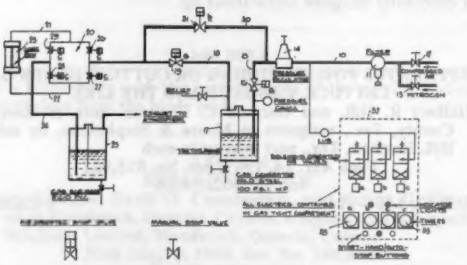
A cord tension pulley for double traverse rod installations having a dual pulley mounting head and a common cord-tensioning apparatus for the dual head. The dual head has a cover plate which normally retains the cords on the pulleys and which is mounted for movement to an open position to allow the dual traverse cords to be individually inserted and removed from the ends of the pulleys.

3,590,901
REPLACEMENT COVER AND ITS APPLICATION TO AN OUTDOOR CHAIR
Emanuel Dubinsky, 703 East Tremont Ave., New York, N.Y.
Filed May 19, 1969, Ser. No. 825,764
Int. Cl. A47c *7/16*
U.S. Cl. 160—327 **6 Claims**

An outdoor aluminum frame chair is provided with a replacement cover which can be easily installed without taking apart the chair frame. The replacement cover is made by winding vinyl tubing on a temporary jig of oblong shape corresponding to the size of the chair frame. Upon completion of the winding, the top and bottom portions of the vinyl tubing are heat-sealed together in two places by a semicontinuous heat seal extending at right angles to the direction of the winding. Then the cover is removed from the jig and is applied to the frame of a chair. Looped strands of the edges of the cover are alternately placed above and below the frame tubes of the chair and wirelike rods of various types are used to attach these strands to the two opposed frame tubes.



3,590,902
PRODUCTION OF FOUNDRY CORES AND MOLDS
James Walker, Lower Gornal, near Dudley, and Geoffrey W. Westwood, Walsall, both of, England, assignors to Foseco Fordath A. G., Zug, Switzerland
Filed May 27, 1968, Ser. No. 732,217
Claims priority, application Great Britain, Feb. 14, 1968, 7211/68
Int. Cl. B22c *1/22, 9/12*
U.S. Cl. 164—43 **15 Claims**



A foundry core is prepared by coating said with a mixture of a novolac resin and a polyisocyanate the coated sand being introduced into a core box, mold or pattern and a volatile amine, such as triethylamine, passed into the core box, mold or pattern to obtain a rapid cure.

3,590,903
PRODUCTION OF METAL CASTINGS
Percy Ronald Taylor, Wrexham, Wales, assignor to Monsanto Chemicals Limited, London, England
Filed Mar. 19, 1968, Ser. No. 714,347
Claims priority, application Great Britain, Mar. 31, 1967, 14824/67
Int. Cl. B22d *23/00*
U.S. Cl. 164—53 **16 Claims**

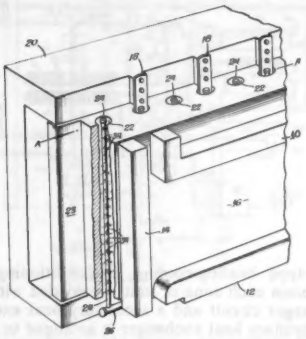
A process for the production of a metal casting which has a substantially pit-free surface whereby the metal is cast into a mold such as a block or piece mold which has a layer of particulate active carbon, that is undergoing combustion, covering that portion of such mold which contains or holds said cast metal.

3,590,904

METHOD AND APPRATUS FOR COOLING GRAPHITE MOLDS

James Woodburn, Jr., Wheaton, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 626,812, Mar. 29, 1967. This application June 4, 1968, Ser. No. 737,256
Int. Cl. B22d 7/10, 27/04
U.S. Cl. 164—126 5 Claims



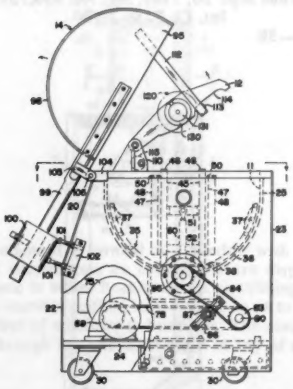
Water sprays are located inside holes bored vertically at the centerline of graphite mold blocks, in order to cool and prolong the life of the mold.

3,590,905

APPARATUS FOR FORMING CERAMIC SHELL MOLDS

Claude H. Watts, Lyndhurst, and Floyd D. Benthimer, Warrensville Heights, both of, Ohio, assignors to Precision Metalsmiths, Inc.

Filed Apr. 8, 1968, Ser. No. 719,575
Int. Cl. B22c 13/08
U.S. Cl. 164—165 12 Claims



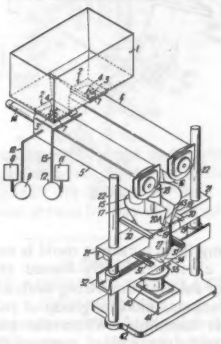
Apparatus for use in forming ceramic shell molds including a slurry tank, a pair of pivoted arms adapted to support a pattern setup for rotation about a horizontal axis and to lower the setup into the tank for the application of a slurry coating, and a cover adapted to close and seal the tank, whereby a vacuum can be produced therein during application of the slurry coating.

3,590,906

COLD-BOX RESIN-BONDED FOUNDRY CORE-MAKING MACHINE

Derek Randolph Bayliss, Kidderminster, and Terence Hugh Middleton, Shirley, both of, England, assignors to British Leyland Austin-Morris Limited, Birmingham, England and The Borden Chemical Company U. K. Limited, Southampton, England

Filed Feb. 10, 1969, Ser. No. 798,032
Claims priority, application Great Britain, Feb. 16, 1968, 7592/68
Int. Cl. B22c 15/24
U.S. Cl. 164—200 3 Claims



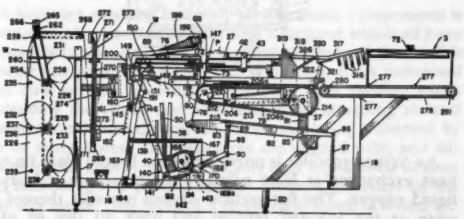
An apparatus for performing the method of producing resin-bonded foundry cores by the cold-box technique which involves delivering two segregated mixes, of sand and resin and of sand and hardener respectively, into a mixing device to produce a homogeneous final mixture of all the materials, and blowing the final mixture into a mould cavity in a corebox.

3,590,907

ROLL SUPPORTS FOR AUTOMATIC WRAPPING MACHINES

Erik O. Vilen, Niles, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.

Division of Ser. No. 632, 959, Apr. 24, 1967, Pat. No. 3,486,294.
Filed Aug. 26, 1969, Ser. No. 853,142
Int. Cl. B65h 75/02, 17/12
U.S. Cl. 242—55 4 Claims



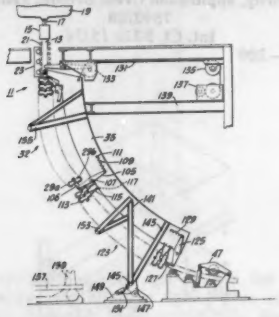
A plurality of vertically spaced rolls of wrapping material are supported at one end of a wrapping machine, one of which is in an operative position where the web of material is being fed through the machine, and the others are in a storage position. The support for the operative position of each roll includes a driving shaft and an idler shaft on which the roll rests and is adjacent the storage support therefor to which the roll may be transferred by mere manual force when not in use.

3,590,908

APPARATUS FOR BENDING CONTINUOUS CAST SLABS

Kurt Reinfeld, and Emmanuel V. Gouye, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed June 30, 1969, Ser. No. 837,851
Int. Cl. B22d 11/12
U.S. Cl. 164—282 7 Claims



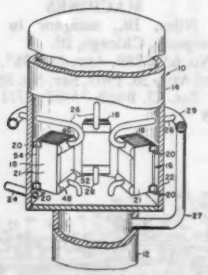
A slab emerging from a casting mold is supported by an articulated roller chain resiliently biased and mounted to a frame. Groups of rollers comprising such chain are mounted to equalizing brackets, and one group of rollers is secured to a piston-cylinder assembly. When the piston cylinder assembly is actuated, the rollers connected thereto exert a bending force on the slab which curves and is supported by the articulated roller chain.

3,590,909

OXYGEN BOILER

Alan G. Butt, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 29, 1869, Ser. No. 872,228
Int. Cl. F28g 13/06
U.S. Cl. 165—108 6 Claims



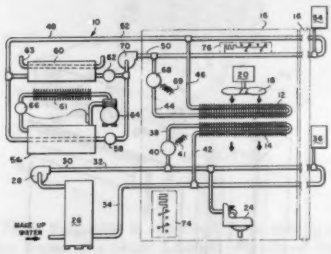
An oxygen reboiler is provided with a brazed plate fin-type heat exchanger at least partially submersed in a body of liquid oxygen. The flat vertical oxygen passages thereof are open at the top and bottom and have no fins or other separate extended heat transfer surface therein which may tend to cause accumulations of hazardous acetylene. These passages are closed at their vertical edges to promote percolator action of the liquid oxygen therein when heated by nitrogen passing through adjacent passages. The conventional closing bar or other elongated member normally brazed between plate surfaces to close these vertical edges has been substantially eliminated from the oxygen passages to thereby reduce the diffusion of molten braze metal onto the plate surfaces thereof. The vertical edges of these passages have been closed with a vertical panel spaced from the plate surfaces.

3,590,910

HEATING-COOLING AIR-CONDITIONING SYSTEM CONTROL

John W. Lorenz, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jan. 2, 1970, Ser. No. 311
Int. Cl. F24f 3/00
U.S. Cl. 165—22 7 Claims



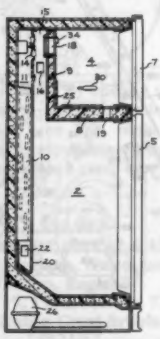
A zone-type heating-cooling air-conditioning system is shown wherein each zone or unit is provided with a primary heat exchanger circuit and a secondary heat exchanger circuit. The primary heat exchanger is arranged to be supplied with warm water during the heating season and chilled water during the cooling season. The secondary heat exchanger is arranged to be supplied with domestic warm water. Each of the heat exchangers is provided with a control valve for controlling the circulation of heat exchange fluid therethrough. A fan is arranged to circulate air of the respective zone serially in heat exchange relationship with the primary heat exchanger and the secondary heat exchanger. A zone temperature control system responsive to the temperature of the respective zone and the temperature of the heat exchange fluid being supplied to the primary heat exchanger controls the operation of the valves and fan.

3,590,911

COMBINATION REFRIGERATOR INCLUDING CONVERTIBLE COMPARTMENT

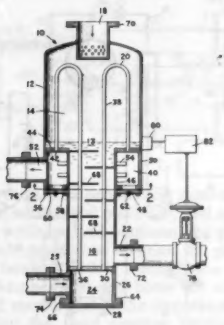
Julius B. Horvay, Lousiville, Ky., assignor to General Electric Company

Filed Sept. 10, 1969, Ser. No. 856,739
Int. Cl. F25b 29/00
U.S. Cl. 165—30 5 Claims



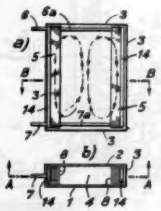
A combination refrigerator including a freezer compartment, a fresh food compartment and a convertible compartment includes means for supplying below freezing air to all of the compartments. Electric housing means are provided in the convertible compartment for operation of the convertible compartment at an above freezing temperature.

3,590,912
VERTICAL STAGGERED SURFACE FEEDWATER HEATER
Frederick T. Elder, Mountain Lakes, and Renato R. Noe, Union City, both of, N.J., assignors to Worthington Corporation, Harrison, N.J.
Filed Jan. 22, 1969, Ser. No. 792,953
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 9 Claims



A multipass vertical heat exchanger constructed to provide different lengths of heat exchange tubing for carrying liquid on different passes through the heat exchanger. The construction avoids unnecessary flooding of heat exchange tube surface with steam condensate in the higher passes of the heat exchange tubing through the heat exchanger.

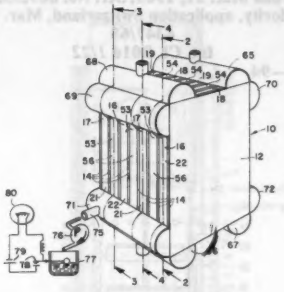
3,590,913
WALL ELEMENT HAVING MEANS FOR SELECTIVE HEATING AND COOLING THEREOF
Hans R. Tschudin, Sissach, Switzerland, assignor to Sulver Brothers, Ltd., Winterthur, Switzerland
Filed July 1, 1968, Ser. No. 741,524
Claims priority, application Switzerland, July 4, 1967, 9611/67
Int. Cl. F24d *12/00*; F24f *5/00*
U.S. Cl. 165—48 20 Claims



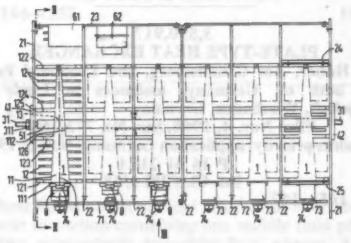
The wall element is formed as a window with an enclosed space. Heat transmitters or exchangers are disposed in the enclosed space to either heat or cool a circulating light-transmitting heat carrier medium in the space so as to balance the heat loss effect of windows in buildings. The medium can be circulated through the enclosed space in any of a number of paths.

3,590,914
COUNTERCURRENT FLOW PLATE-TYPE HEAT EXCHANGER WITH LEAK DETECTOR
Franklin D. Duncan, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Oct. 1, 1969, Ser. No. 862,832
Int. Cl. F28f *3/00*
U.S. Cl. 165—70 10 Claims

A countercurrent flow plate-type heat exchanger having barrier spaces between adjoining heat exchange passage and a header conducting a heat exchange fluid other than that flowing through said passage. The barrier spaces contain a corrugated metallic fin material to impart structural continuity to the heat exchanger core and to provide the heat-conducting link between adjacent fluid-conducting passages. The various barrier spaces are placed in fluid communication with a leak detection means by way of barrier space headers.

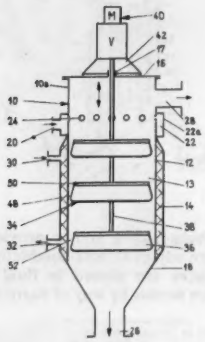


3,590,915
HEAT SINK ASSEMBLY FOR ELECTRONIC COMPONENTS
Gunter Riedel, Konstanzerstr. 63, Munich 13, and Herbert Prenzlau, Rauschbergweg 3, Olching, both of, Germany
Filed Apr. 15, 1969, Ser. No. 816,334
Claims priority, application Germany, Mar. 18, 1969 P 19 13 546.7
Int. Cl. F28f *7/00*; H01l *3/00*
U.S. Cl. 165—80 10 Claims



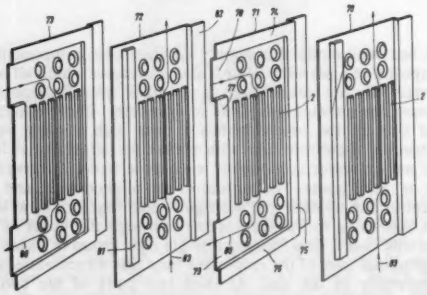
A heat sink modular assembly for electronic components is composed of a plurality of heat sink structures which all have substantially the same design, a prismatic overall shape with at least one geometrical plane of symmetry. Each individual heat sink of the assembly has a core with cooling vanes protruding therefrom and with means for attaching at least one semicondctor component, each core being traversed by one or more bores. The structures are aligned with, and adjacent to one another and are rigidly held together by at least one tensioning rod passing serially through the bores of the heat sink cores, thus forming a single rigid group in which the longitudinal axes of the respective heat sink structures extend transversely of the rod. At least two pairs of the cooling vanes extend from each core on opposite sides of the core axis in a plane parallel to the tensioning rod and are axially spaced from each other at opposite sides of the tensioning rod. The vanes of these pairs have abutment faces at their respective edges. All of these abutment faces on one side of the axis are situated in a plane perpendicular to the tensioning rod and parallel to the plane of symmetry, and all of the abutment faces on the opposite side of the rod are located in another plane parallel to the plane of symmetry. The entire heat sink structure inclusive of all other vanes is accommodated between the two abutment face planes.

3,590,916
THIN FILM APPARATUS
Arnold Mutzenberg, Buchs, Saint Gall, and Fritz Widmer, Fallanden, Zurich, both of, Switzerland, assignors to Luwa AG, Zurich, Switzerland
Filed Mar. 21, 1969, Ser. No. 809,333
Claims priority, application Switzerland, Mar. 25, 1968, 4347/68
Int. Cl. B01d *1/22*
U.S. Cl. 165—94 22 Claims



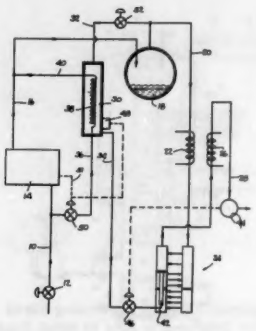
There is disclosed a thin film apparatus for the thermal treatment of fluent or flowable materials in a treatment compartment. A treatment member serves to spread or distribute the material to be treated in the form of a thin film upon the treatment wall of the treatment compartment. According to an important aspect of the invention, the treatment member comprises at least one spreader element for the material to be treated. Drive means serve to impart relative movement between the treatment member and the treatment wall.

3,590,917
PLATE-TYPE HEAT EXCHANGER
Johann Huber, Am Grundelberg, and Leonhard Poth, Pullach, both of, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Nov. 4, 1968, Ser. No. 773,268
Claims priority, application Germany, Nov. 3, 1967
P 16 01 216.1
Int. Cl. F28f *3/08*
U.S. Cl. 165—167 3 Claims



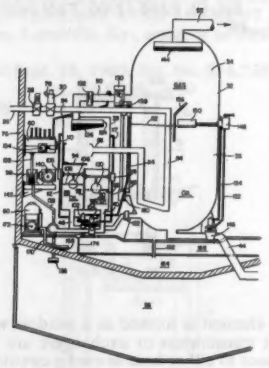
A plate-type heat exchanger in which the stamped plates have corrugated central portions flanked by noncorrugated inlet and outlet zones. The sinusoidal and trapezoidal section corrugations of the plates are offset by half the distance between the corrugations to form uniform cross section channels throughout the stack. The plates are bonded together along marginal portions and at their bearing faces with a thermosetting synthetic resin.

3,590,918
METHOD AND APPARATUS FOR OBTAINING PURE SPRAY WATER FOR STEAM DESUPERHEATING PURPOSES
Albert H. Rawdon, Jr., Shrewsbury, Mass., assignor to Riley Stoker Corporation, Worcester, Mass.
Filed June 11, 1969, Ser. No. 832,265
Int. Cl. B60h *1/00*
U.S. Cl. 165—1 10 Claims



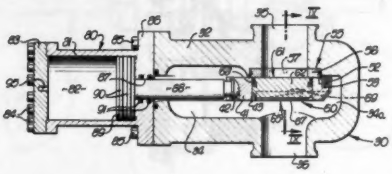
This invention relates to a method and apparatus for obtaining pure spray water for steam desuperheating purposes wherein a portion of the steam produced in the boiler is passed through a condensing chamber, and the liquid condensate is then used as the spray water.

3,590,919
SUBSEA PRODUCTION SYSTEM
William A. Talley, Jr., Dallas, Tex., assignor to Mobil Oil Corporation
Filed Sept. 8, 1969, Ser. No. 855,961
Int. Cl. F21b *43/01*
U.S. Cl. 166—.5 5 Claims



A subsea production method and apparatus separates substantially waterfree gas from oil in a subsea satellite located adjacent a plurality of subaqueous wells. Production fluid from the subaqueous well enters the satellite through production fluid lines, passes through a heat exchanger, and enters into a liquid knockout section. Separated gas and oil then enter into a low-temperature separator to complete the separation of the substantially waterfree gas from the oil. A hydrate depressant is injected into the substantially waterfree gas before entry into the low-temperature separator through a variable choke so as to depress the formation of hydrates from any water remaining in the substantially waterfree gas.

3,590,920
REMOTE-CONTROLLED OIL WELL PIPE SHEAR AND SHUTOFF APPARATUS
Valdek J. Orund, Anaheim, and Edward T. Cugini, Brea, both of, Calif., assignors to Shaffer Tool Works, Brea, Calif.
Filed Mar. 12, 1969, Ser. No. 806,516
Int. Cl. E21b *29/00*
U.S. Cl. 166—55 10 Claims



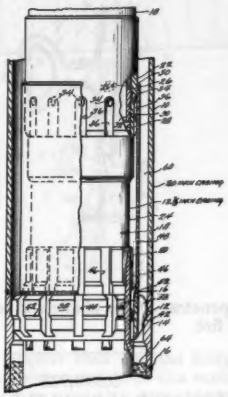
In an offshore oil well production system including a surface platform, a submerged wellhead, and a pipe string interconnecting the wellhead and platform, the provision of a pipe shear and shutoff apparatus between the platform and wellhead having a housing with a throughbore with an enlarged intermediate chamber and end bores for receiving a section of the pipe and means within the apparatus for shearing the pipe and closing the fluid passage through the apparatus when the pipe is severed, means for selective actuation of the apparatus and remote control means for the actuating means which is operative at a remote location from the wellhead notwithstanding the loss of physical connection between the platform and wellhead through the pipe string, such as when the pipe string is ruptured.

3,590,921
OIL-WELL-TYPE FISHING TOOL
Roy A. Brunjes, New Iberia, La., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,725
Int. Cl. E21b *31/08*; E05c *19/06*
U.S. Cl. 166—99 5 Claims

A fishing tool for oil well use. It has a recovery chamber with a piston actuated wedge therein. The wedge will force a fish against teeth near the opening of the chamber to hold the fish securely.

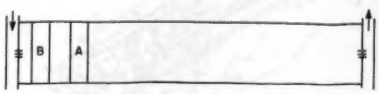
3,590,922
WASHING CEMENT FROM AROUND DISCONNECTIBLE DOWN HOLE CONNECTION
John Slack, and Willis Marvin Phipps, both of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.
Filed Nov. 14, 1969, Ser. No. 876,809
Int. Cl. E21b *43/10*
U.S. Cl. 166—208 11 Claims

After an intercasing string annulus has been cemented to a level above a down hole hanger in the inner string, a sub is partly backed out of an upward extension of the hanger to expose circulating ports having conduits channeling washing fluid to substantially below the sub-to-hanger connection and preferably to the level of the hanger flutes, to provide for



disconnection and reconnection of the sub (for temporary abandonment of the well) and for cutting the inner casing below its hang point (for recovery of the string in a permanent abandonment of the well).

3,590,923
METHOD OF DETERMINING FLUID SATURATIONS IN RESERVOIRS
Claude E. Cooke, Jr., Houston, Tex., assignor to Esso Production Research Company
Filed Dec. 3, 1969, Ser. No. 881,774
Int. Cl. E21b *43/22*, *47/00*
U.S. Cl. 166—252 10 Claims

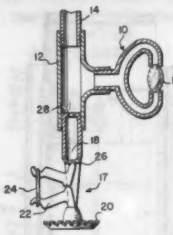


A method for determining fluid saturations in a subterranean reservoir formation containing one mobile fluid phase and one or two substantially immobile fluid phases. A carrier fluid which is miscible with the mobile fluid and substantially insoluble in the immobile phase or phases is injected into the formation at one location and displaced through the formation to a second location. The carrier fluid contains two or more tracers having different partition coefficients between the carrier fluid and immobile phase or phases. As the carrier fluid moves through the reservoir, one of the tracers is retarded more than the other due to its higher solubility in the immobile phase and the tracers separate. The degree of separation of the tracers is related to the quantities of mobile and immobile fluids in the reservoir. By monitoring formation fluids at the second location to detect the presence of the tracers, the relative fluid saturations can be determined using chromatographic analytical techniques.

3,590,924
DUAL NOZZLE SPRINKLER HEAD
Howard W. Emmons, Sudbury; Cheng Yao, Weston, and James B. Smith, Wellesley Farms, all of, Mass., assignors to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.
Filed Dec. 24, 1968, Ser. No. 786,659
Int. Cl. A62c *37/12*
U.S. Cl. 169—17 11 Claims

Method and apparatus for dispersing a fire extinguishant in

which dual nozzles are employed in each sprinkler head to form separately a fine mist for cooling and a spray of coarse droplets to penetrate a fire plume and reach fuel surfaces to extinguish a fire.

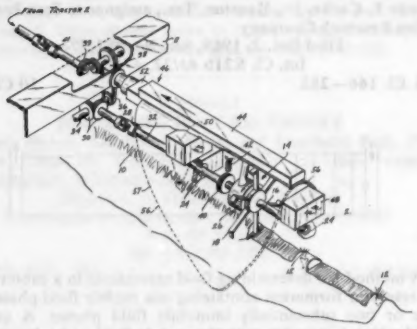


3,590,925

AUTOMATED AGRICULTURAL SYSTEM

Arthur L. Troutner, Boise, Idaho; Don Lebell, Santiago, Chile, and William A. Koelsch, San Jose, Calif., assignors to Tara Corporation

Filed May 6, 1968, Ser. No. 728,857
Int. Cl. A01b *63/110*
U.S. Cl. 172—6 **3 Claims**



The present invention relates to an automated agricultural system for variously servicing the plants of a row crop and particularly to such a system for scanning rows of the crop to accomplish such services as thinning, weeding, blocking, fertilizing, and so on. The system selectively identifies row plants that are to be preserved, a system for processing radiation that is reflected from such plants. The system, as disclosed, also includes specific structure for thinning row plants, spaced apart by a preselected distance.

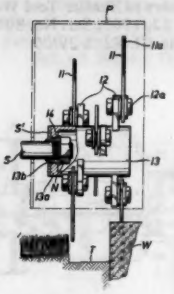
3,590,926

CUTTING BLADE ASSEMBLY FOR LAWN EDGERS

Frank J. Tepera, 1183 Curtin, Houston, Tex.

Filed Aug. 19, 1968, Ser. No. 753,465
Int. Cl. A01b *45/04*
U.S. Cl. 172—15 **6 Claims**

Cutting blades are pivotably secured to a series of staggered, radially projecting arms extending from a tubular body. A centrally apertured plate is secured to one axial end of the body to receive an adapter bushing for mounting the body on different size, rotatable lawn edger shafts. Rotation of the edger shaft extends the blades by centrifugal force to cut a relatively wide path between a lawn and a boundary such as a sidewalk.

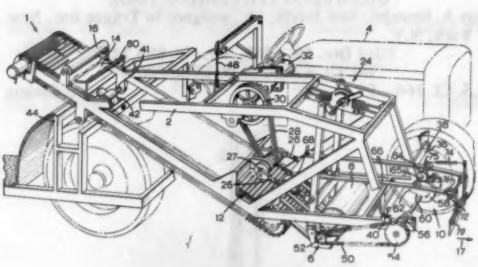


3,590,927

MOUNTING FOR SOD-CUTTING MACHINE

Gerardus Johannes Brouwer, Keswick, Ontario; John Van Dyken, Newmarket, Ontario, and Klass Oussoren, Newmarket, Ontario, all of, Canada, assignors to The Ryan Equipment Company, St. Paul, Minn., by said Brouwer

Division of Ser. No. 560,770, June 27, 1966, Pat. No. 350,944.
Filed Sept. 29, 1969, Ser. No. 861,661
Int. Cl. A01b *45/04*
U.S. Cl. 172—19 **7 Claims**



A sod cutter having a vibrating sod undercutting blade. Several thin, flat guide strips, connected to the rear of the blade, extend rearwardly to the front end of a conveyor mounted behind the blade, to guide cut sod from the blade onto the conveyor. A cutoff blade, to cut sod to length, is periodically driven into the ground by springs. A tiltable mounting permits the cutoff blade, as it is slowly raised between strokes by a spiral cam, to tilt rearwardly during times when it drags along the ground.

The sod cutter is guided over the ground by a roller and is mounted on a support vehicle at two pivot points spaced lengthwise along and centrally located widthwise of the cutter. This allows the cutter to rock laterally with its roller independently of the support vehicle, to adjust to local variations in the surface traversed.

3,590,928

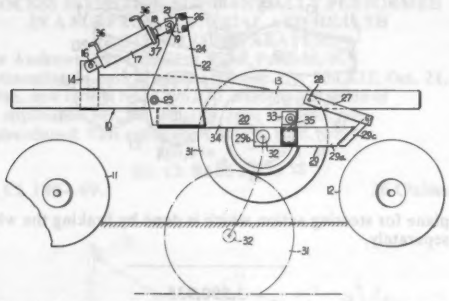
TRANSPORT WHEEL LINKAGE MECHANISM

Ferndinand Mirus, Ojai, Calif., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Apr. 28, 1969, Ser. No. 819,553
Int. Cl. A01b *63/22, 73/00*
U.S. Cl. 172—240 **5 Claims**

A semimounted or pulled type agricultural implement having wheels used for transport and depth control and wherein

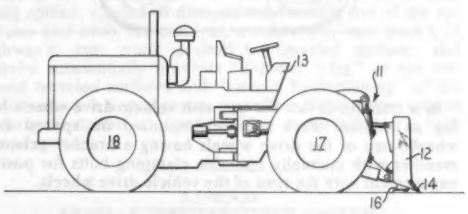
such wheels are positioned between a front and a rear ground working tool. Linkage for supporting such wheels adjacent the center of gravity for transport purposes and for positioning such wheels sufficiently spaced from the discharge portion of the front ground working tool as to avoid plugging of material between such tool and such wheel.



3,590,929
BULLDOZER BLADE MOUNTING

Leon A. Wirt, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 15, 1968, Ser. No. 752,873
Int. Cl. E02f 3/76
U.S. Cl. 172—803 7 Claims



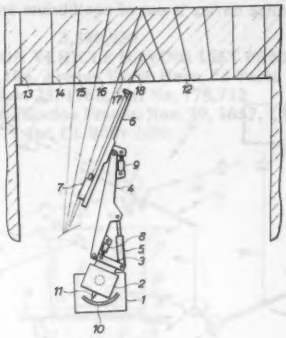
A bulldozer blade mounting for minimizing mechanical stresses during tilting of the blade and for maintaining generally constant blade pitch during raising and lowering of the blade, comprising three generally parallel members pivotally mounted between the blade and its supporting vehicle. Two of the members are parallel push arms arranged in a generally horizontal plane relatively adjacent the base of the blade. The third member is an extendible link arranged in a generally central location between the vehicle and an upper portion of the blade to provide triangular support for the blade and to permit pitching of the blade.

3,590,930
ARRANGEMENT FOR GUIDING A ROCK DRILL

Teuvo Tapio Gronfors, Oy Tampella Ab., Tampere, Finland

Filed Dec. 4, 1968, Ser. No. 781,104
Int. Cl. E21c 9/00
U.S. Cl. 173—20 5 Claims

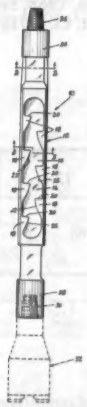
The present invention concerns an arrangement for guiding a rock drill, the arrangement consisting of a base, a body, a turnplate turnable about a horizontal axis and attached to the body, a jib attached to the turnplate and turnable in a plane passing through the axis of the turnplate, and a feed device attached to the free end of the jib and turnable in the same plane, in which device a drill has been mounted, the jib and body on one hand and the feed device and jib on the other hand being mutually connected by hydraulic cylinders, which cooperate in such manner that the drilling front, or the direction of the feed device, automatically remains unchanged regardless of the motions of the jib, and in which for the purpose of performing W-cut drilling the body has been journaled to be turnable about a vertical axis. The basis is provided with an angular scale and the body being correspondingly provided with an index, or vice versa.



3,590,931
LIFTING DEVICE FOR PERCUSSION DRILLING CUTTINGS

Allen E. Bardwell, Princeton, N.J., assignor to Waltham Industries Corporation, New York, N.Y.

Filed Jan. 7, 1969, Ser. No. 789,542
Int. Cl. E21c 15/00
U.S. Cl. 175—324 11 Claims



A lifting device for cuttings made in cable tool drilling comprising an elongated body having a central portion of "H" cross section including a central web and a cavity opening outwardly from each side, staggered integral lifting fins being disposed along the two opposed walls of the cavities and adjacent said web, each fin having a flat cuttings supporting surface and tapering downwardly to merge with the wall, and attaching means at each end for operative insertion of the device in a drilling string.

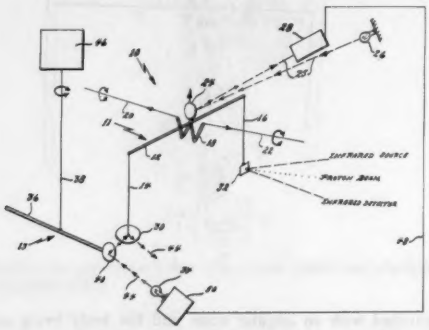
3,590,932
LIGHT PRESSURE OPERATED MICROBALANCE

Jens P. Dybwad, and Karl P. Zinnow, both of Arlington, Mass., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed Apr. 30, 1970, Ser. No. 33,444
Int. Cl. G01g 3/00, 7/00, 23/32
U.S. Cl. 177—210 10 Claims

A microbalance utilizing the pressure of light for counterbalancing small changes in mass or force on the balance hav-

ing a balance device and measuring device. The sample to be investigated is supported by the balance device, while the counteracting light pressure is reflected from the measuring device to the balance device. A detector determines when the balance device is out of equilibrium and accordingly va-

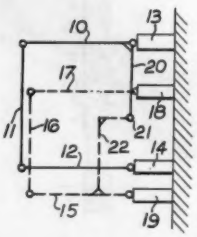


ries the intensity of the light in order to counteract the unbalance. During this operation the measuring device determines how much light force was necessary to counterbalance the mass change on the sample and restore the system to equilibrium.

3,590,933
WEIGH BEAMS

Arthur Walter Forman, Northwood, England, assignor to Driver Southall Limited, Birmingham, England

Filed Dec. 16, 1968, Ser. No. 783,887
Int. Cl. G01g *3/08*
U.S. Cl. 177—229 **17 Claims**



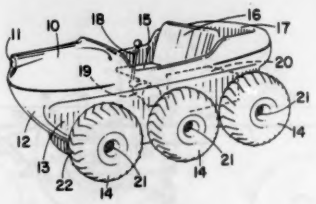
A weighing apparatus comprising a pair of beam members, each having a load or resistant carrying portion which extends on the same side of the fixed supporting fulcra of the beam members, said beam members being interconnected so that deflection in one direction of the said portion of one of the members causes deflection of the like portion of the other member in the opposite direction. The beam members each operate as one arm or half-beam of a balance (which may be of Roberval type) and which is of compact construction and has low sensitivity to external vibration.

3,590,934
CONTROL COLUMN FOR TERRAIN VEHICLE

Joachim Wappler, 11 Clayhall Crescent, Downsview, Ontario, and Arno C. Schwarz, 55 Oakmount Road Apt. 1503, Toronto, 5 Ontario, both of, Canada

Filed June 10, 1968, Ser. No. 746,718
Int. Cl. B62d *11/08*
U.S. Cl. 180—6.2 **10 Claims**

A single control stick for a motor-driven vehicle with wheels pivotally mounted on a locating means for movement in two planes of movement, a first plane of movement along the longitudinal axis to provide accelerating action or braking action, a second plane of movement normal to the first

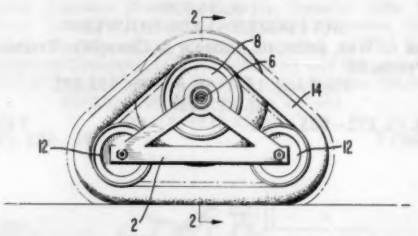


plane for steering action which is done by braking the wheels separately.

3,590,935
CLUTCH AND ATTACHMENT DEVICE FOR VEHICLE WHEELS

Angelo Celia, 50 Notley Road, Silver Spring, Md.

Filed Nov. 4, 1968, Ser. No. 772,943
Int. Cl. B62d *55/04*
U.S. Cl. 180—9.5 **2 Claims**

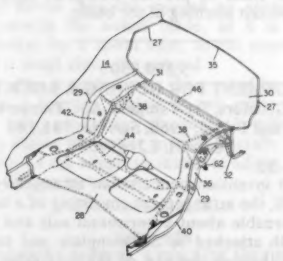


In a traction device for use with vehicle drive wheels having an endless track member mounted on spaced drive wheels, one of the drive wheels having a bracket extension member with manually operable clamping bolts for positive engagement with the rims of the vehicle drive wheels.

3,590,936
STRUCTURE OF A MOTOR VEHICLE

Henry W. Wessells, III, Paoli, and Walter S. Eggert, Jr., Huntingdon Valley, both of, Pa., assignors to The Budd Company, Philadelphia, Pa.

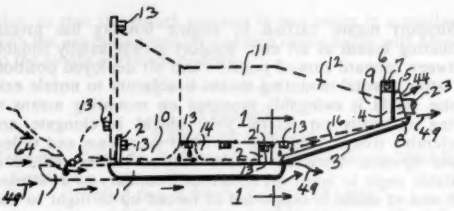
Filed July 25, 1969, Ser. No. 844,999
Int. Cl. B60k *5/12*; **B62d** *23/00*
U.S. Cl. 180—64 R **4 Claims**



A vehicle rear structure of a unitized body structure for supporting a rear-mounted engine and providing reinforced collision resistant bumper-supporting structure. The engine mount consists of a pair of crossbeams connected to the integral sidesills having studs and nuts secured thereon for attaching the engine. The sidesills are fabricated from an L-

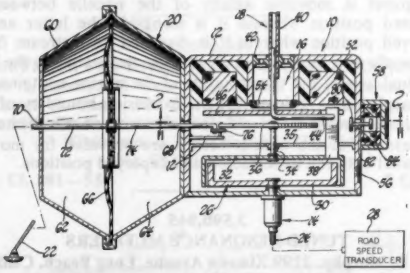
shaped angle section, the rear floor pan and inner uniside panels.

3,590,937
PROCESS INVENTION SUBSTANTIALLY PERFORMED IN A SURFACE, MATERIAL AND HEALTH PROTECTIVE APPARATUS
Peter Andrews, 190 Gebhardt Road, Penfield, N.Y.
Continuation-in-part of application Ser. No. 508,625, Oct. 21, 1965, now Patent No. 3,396,810, which is a division of application Ser. No. 288,159, June 17, 1963, now abandoned. This application Aug. 5, 1968, Ser. No. 750,094
Int. Cl. B62d *25/20*
U.S. Cl. 180—69.1 **26 Claims**



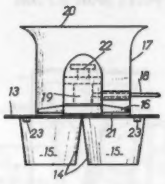
A process substantially performed in a motor vehicle fluid or oil dripping and/or centrifugally thrown-out fluid or oil retaining receptacle apparatus which is secured to a motor vehicle. This process invention is for increasing the rate of oxidation and thickening of the fluid retained substantially in at least one fluid retaining portion of the disclosed apparatus, whereby the retained fluid is increasingly prevented from being spilled, ejected or dumped substantially out of the apparatus and onto, for example, a roadway's, race track's or highway's, car, truck and/or bus-traveled surface, and thereby substantially prevents "summer icing" of the disclosed traveled surfaces and "viscous hydroplaning" of the motor vehicle's tires thereon, regardless if the motor vehicle is abruptly started, stopped, curving or traveling at a high rate of speed.

3,590,938
VEHICLE SPEED CONTROL SYSTEM
I. Macit Gurol, Farmington, Mich., assignor to GSE Incorporated, Detroit, Mich.
Filed May 21, 1969, Ser. No. 826,470
Int. Cl. B60k *31/00*
U.S. Cl. 180—108 **32 Claims**



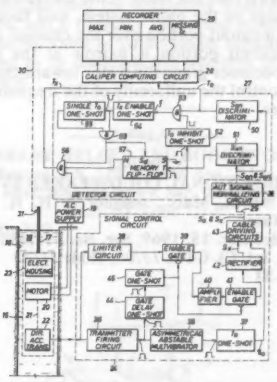
An automotive speed control system including a fluid pressure modulator and a throttle actuator responsive to pressure variations in the modulator to control throttle setting. The modulator includes a housing communicating with a subatmospheric pressure source through a fluid conduit and communicating with atmospheric pressure through a primary opening. A value valve element rotatable to a position representing indicated vehicle speed drives a memory disc carrying the fluid conduit to a corresponding position. At the desired speed, the memory disc is fixed in position and the primary opening is closed. Rotation of the valve element relative to the fluid conduit thereafter modulates pressure in the housing and controls the throttle actuator.

3,590,939
AIR CUSHION VEHICLE HAVING LIFT FANS
Andre Grihangne, 186, Avenue Victor Hugo, 75-Paris, France
Filed Nov. 25, 1968, Ser. No. 778,712
Claims priority, application France, Nov. 29, 1967, 130,270
Int. Cl. B60v *1/06*
U.S. Cl. 180—118 **1 Claim**



Air-cushion vehicle comprising one or more variable-pitch, axial flow, ducted lift fans, the pitch variation of which is controlled in dependence of the cushion pressure, attitude, lift power requirements or other conditions of operation of the vehicle.

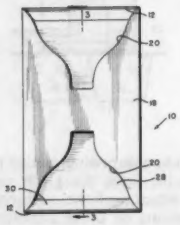
3,590,940
WELL-LOGGING APPARATUS
Geary L. Leger, Yucaipa, Calif., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed May 26, 1969, Ser. No. 827,798
Int. Cl. E21b *47/08*; G01v *1/00*
U.S. Cl. 181—0.5 BE **16 Claims**



In accordance with an illustrative embodiment of the present invention, a well tool having a rotating transducer is moved through a well bore. The transducer is repetitively energized to emit acoustic energy into the media surrounding the well too, which energy is reflected off of various circumferential portions of the well bore wall and returned to the rotating transducer. An electrical signal pulse is developed in response to each burst of reflected energy received by the transducer and this pulse, along with an electrical sync pulse representative of the time at which the transducer is energized, is transmitted to the surface of the earth. At the surface of the earth, the time relationship of the sync and signal pulses to one another is measured to provide information concerning the average well bore radius or diameter, well bore eccentricity, as well as information as to the authenticity of these caliper measurements. To provide this information, the time spacing between the sync and signal pulses is converted to an amplitude signal. This amplitude signal is

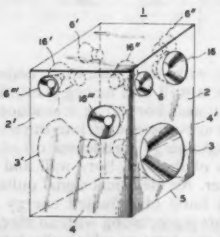
then filtered to provide an average radius measurement and the maximum and minimum amplitude levels of this amplitude signal per revolution or so of the rotating transducer are measured to provide maximum and minimum radius measurements. To check the authenticity of these measurements, circuits are provided for determining if there is a signal pulse for every sync pulse.

3,590,941
SPEAKER ENCLOSURE
John A. McKenzie, North Vernon, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Oct. 10, 1969, Ser. No. 865,415
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—31 **8 Claims**



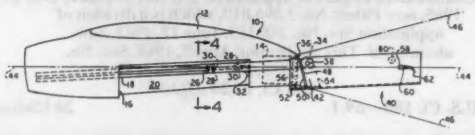
A speaker enclosure for improving the frequency response of a loudspeaker. The speaker is placed within the enclosure and has its face aligned perpendicularly with the front side of the enclosure, so that the speaker axis is directed parallel to the sound output opening of the enclosure. The smallest dimension of the speaker face corresponds with the depth of the enclosure, and said speaker face is sealed against a baffle system which forms a channel directed divergingly outward from the speaker toward one end of the enclosure. A faceplate is sealed over the front of the enclosure and against the forward edge of the baffle system, said faceplate being provided with a cutout portion over the channel of the baffle system. The cutout portion is narrow at the face of the speaker, and becomes gradually wider toward the end of the enclosure to control the uniformity of the frequency response of the enclosure.

3,590,942
OMNIDIRECTIONAL LOUDSPEAKER SYSTEM
Peter Globa, Natick, Mass., assignor to H. H. Scott, Inc., Maynard, Mass.
Filed Dec. 15, 1969, Ser. No. 884,830
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—31 **3 Claims**



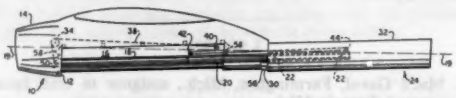
The present disclosure relates to a quadrant-type loudspeaker particularly adapted for the audiofrequency band, having a pair of opposing low-band speakers mounted at different distances from the floor or other resting surface for the loudspeaker system and a plurality of asymmetrically mounted high-, and in some cases, mid-frequency speakers.

3,590,943
SOUND SUPPRESSING APPARATUS
Victor Millman, 5037 Faber Way, San Diego, Calif., and Remo Tontini, 4434 Santa Monica, San Diego, Calif.
Filed Apr. 4, 1969, Ser. No. 847,069
Int. Cl. B64d *33/06;* **B64c** *9/38*
U.S. Cl. 181—33 HC **12 Claims**



Support means carried by engine housing has pivotal mounting means at aft end. Support means axially slidable between forward stowed position and aft deployed position. In latter, pivotal mounting means is adjacent to nozzle exit. Noise shield is swingably mounted on mounting means to swing vertically on lateral axis. Shield is elongate and preferably trough shaped to surround jet stream and reflect noise upward. Optimum results require holding shield at suitable angle to intercept expansion boundary of jet stream. Aft end of shield is supported or forced up in flight to best position by aerodynamic reacting vanes, which may be preset or controlled in response to sensor carried by shield. When support means is stowed, shield is carried forward to stow in streamlined relation to engine housing.

3,590,944
METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF JET-PROPELLED AIRCRAFT
Victor Millman; Remo Tontini, and Edwin C. Kamps, all of San Diego, Calif., assignors to Rohr Corporation, Chula Vista, Calif.
Filed Apr. 17, 1969, Ser. No. 817,018
Int. Cl. B64d *33/06;* **B64c** *9/38*
U.S. Cl. 181—33 HC **7 Claims**

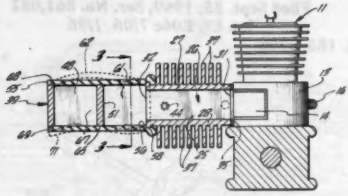


A panel of substantially hemicylindrical form is mounted on the engine nacelle of a jet-propelled aircraft with the longitudinal axis of the panel extending axially of the nacelle. The panel is movable axially of the nacelle between a retracted position wherein it is alongside the latter and a deployed position wherein it is disposed downstream from the nacelle and tilted upwardly at an angle relative to the longitudinal axis of the thrust nozzle of the engine contained in the nacelle so as to intercept the expansion boundary of the jet stream issuing from said nozzle several nozzle diameters downstream of the nozzle. Means are provided for moving the panel between its retracted and deployed positions.

3,590,945
TUNED RESONANCE MUFFLERS
Milo E. Murphy, 2299 Ximeno Avenue, Long Beach, Calif.
Filed Apr. 3, 1970, Ser. No. 25,438
Int. Cl. F01n *1/08, 1/22, 7/10*
U.S. Cl. 181—40 **11 Claims**

An exhaust tube has transverse cooling fins extending from two opposite sides. A restrictive band circles the exhaust gas emitter to hold the tube entry port against the emitter exhaust port. A U-shaped bracket extends from adjacent the exit port of the tube, which has either a fixed or an adjustable baffle secured transversely of the legs of the U. A resilient sheath covers the bracket and is sealed to the tube at one end

and open at the other end but blocked by the base bar of the U-shaped bracket. Gas passes about each transverse edge of the baffle, distending the sheath. Gas passes the end base bar,



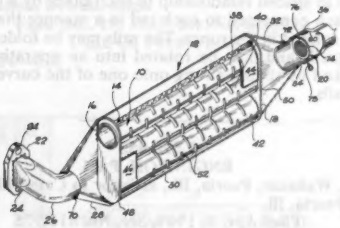
also, so that the sheath pulsates in two zones in accordance with the gas output and the position of the baffle with respect to the length of the gas column.

3,590,946

EXHAUST SYSTEM

Emmet J. Corn, Jr., Lakewood, Calif., assignor to Mini-Fold Scooter Co., Inc.

Filed Dec. 3, 1969, Ser. No. 881,826
Int. Cl. F01n *1/10, 1/04*
U.S. Cl. 181—50 **3 Claims**



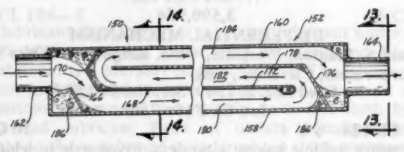
An elongate core member is disclosed defining indentations therein which afford a fluted interior passage, the walls of the indentations being relatively thin at times defining openings therethrough. The core member is disclosed in a folded configuration enclosed by a housing with a cushioned lining pad separating the core member from the housing. A screen is positioned in the duct which is partially defined by the core, to assure the passage of only particles of minimum size.

3,590,947

MUFFLER FOR INTERNAL COMBUSTION ENGINES

Theo A. Latch, 808 West Main Street, Marshalltown, Iowa; Russell A. Casey, 102 Cherry Street, Marshalltown, Iowa, and Gordon K. Edwards, R.R. #1, Albion, Iowa

Filed Sept. 4, 1968, Ser. No. 757,234
Int. Cl. F01n *1/08, 7/18*
U.S. Cl. 181—53 **7 Claims**



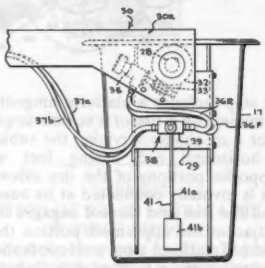
A muffler for internal combustion engines including a hollow casing having a plurality of baffle elements positioned therein which cause the gases to make a plurality of 180° turns as the gases move therethrough. The cross-sectional area of the passageway through which the gases flow is as large or larger than the inlet port and the outlet port of the muffler so that little, if any, back pressure is created as the gases move through the muffler. Gas currents are trapped in "alcoves" adjacent the baffle elements which enhance the flow of gases through the muffler and which also serve to equalize the pressure within the muffler.

3,590,948

BASKET-LEVELING SYSTEM FOR BOOM STRUCTURES

Edwin Earl Milner, Jr., Williamsburg, Va., assignor to Baker Equipment Engineering Co., Inc., Richmond, Va.

Filed Feb. 10, 1970, Ser. No. 10,469
Int. Cl. B66f *11/04*
U.S. Cl. 182—2 **12 Claims**



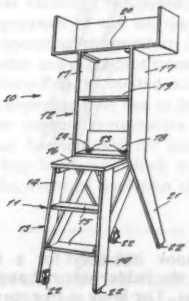
A mobile aerial tower having a pivotally mounted boom for movement about a vertical and a horizontal axis, and a load-supporting platform such as a workman's basket supported on the outer end of the boom for pivoted movement about a horizontal axis, a reversible fluid motor for rotating the platform about the horizontal axis, a hydraulic control valve having a portion maintained in preselected orientation relative to the platform for controlling hydraulic fluid supply to the motor, and a pivotally supported weighted pendulum connected to the valve to continuously regulate fluid flow to the motor so as to maintain the platform in a preselected level condition.

3,590,949

LIBRARY HELPER AND BOOK STORAGE

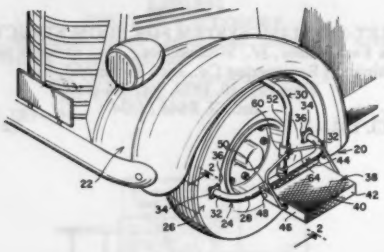
Orville E. Monroe, 4 S. 115 Lincoln Ave., Lisle, Ill.

Filed June 23, 1969, Ser. No. 835,347
Int. Cl. E06c *7/14*
U.S. Cl. 182—129 **1 Claim**



An item of furniture for a library, the device comprising a ladder for gaining access to the upper shelves of a library, the upper portion of the ladder including several shelves upon which books may be transported and from which the books may be transferred into the library bookcases, and the lower end of the ladder being mounted upon casters so as to be readily movable in front of the library bookcases.

3,590,950
PORTABLE STEP FOR VEHICLE MAINTENANCE AND REPAIR
Phillip M. Wilson, 5415 Hartly Road, Satsuma, Ala.
Filed May 1, 1970, Ser. No. 33,687
Int. Cl. E06c 5/24
U.S. Cl. 182—150 **10 Claims**

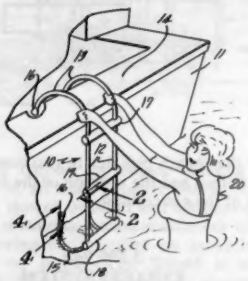


A portable step includes a platform hingedly secured to a frame which mounts on a tire of a vehicle to provide a standing surface for a mechanic servicing the vehicle. The frame includes a horizontal rod having feet which contact diagonally opposite portions of the tire sidewall. A vertical hook support is pivotally connected at its base to the center of the rod and the free end thereof engages the rear surface of the tire adjacent the uppermost portion thereof. To provide an adjustable platform stop, a sleeve is slidably mounted on the hook support and a bracket extends between the sides of the platform and the sleeve. In an alternate embodiment, the hook length is adjustable by engaging a prominence projecting from the base of the hook into one of a plurality of vertically spaced notches.

3,590,951
HOOK ASSEMBLY FOR LADDER
Lewis W. Berger, Louisville Ladder Company, 1163 Algonquin Parkway, Louisville, Ky.
Filed Jan. 12, 1970, Ser. No. 2,038
Int. Cl. E06c 7/48
U.S. Cl. 182—206 **12 Claims**

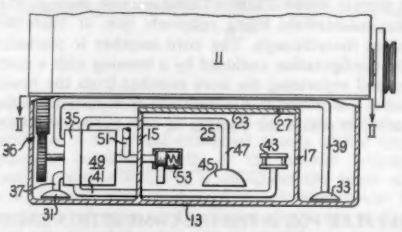
A retractable hook assembly for a ladder includes a bracket secured to the ladder side rail and a hook extending through the bracket. The hook is free to move, linearly and pivotally, relative to he bracket. A locking means is secured to the hook and has at least two surfaces each adapted to be brought into locking engagement with a locking surface on the bracket. A recess is provided adjacent the locking surface so that the hook can be moved linearly against the force of a biasing spring into alignment with the recess and then pivoted relative to the bracket to selectively bring either of the surfaces on the locking means into locking engagement with the locking surface on the bracket.

3,590,952
BOAT LADDER
Charles F. Thomas, Orlando, and Allen C. Thomas, Tampa, both of, Fla., assignors to Jockson Recreation Products, Inc., Winter Park, Fla.
Filed Sept. 25, 1969, Ser. No. 861,082
Int. Cl. E06c 7/06, 1/36
U.S. Cl. 182—206 **7 Claims**



A standoff boat ladder apparatus for boarding a boat, or the like, has a pair of spaced rails, each rail having both ends curved whereby one end may be hooked over the gunnell of a boat, to hold the rail to the boat, and the other end curved to act as a standoff from the freeboard of the boat. The rails are held in spaced relationship to each other by a plurality of rungs each connected to each rail in a manner that each rail may be rotated in the rungs. The rails may be folded by rotating the rails and may be rotated into an operative position and locked by sliding a rung onto one of the curved portions of the rails.

3,590,953
ENGINE OIL PAN
John C. Wellauer, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 1, 1969, Ser. No. 811,975
Int. Cl. F01m 11/06
U.S. Cl. 184—6 B **6 Claims**

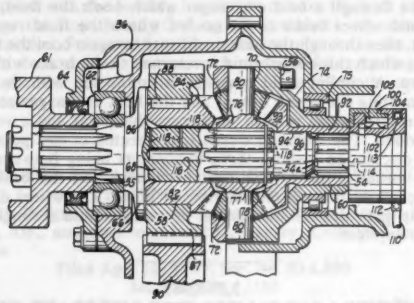


An engine oil pan in which oil is scavenged from the pan at selected positions and delivered to a compartment within the pan, from which it is pumped to the machinery which is to be lubricated.

3,590,954
DIFFERENTIAL MECHANISM
Ronald S. Plantan, Wickliffe, Ohio, assignor to White Motor Corporation, Cleveland, Ohio
Filed Dec. 5, 1969, Ser. No. 882,593
Int. Cl. F16n 7/40
U.S. Cl. 184—6 U **20 Claims**

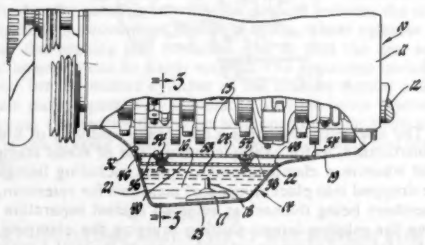
A motor vehicle having a tandem driven axle in which the driven axles are driven from an interaxle differential mechanism. The interaxle differential mechanism is connected to a positive displacement lubricant pump which pumps lubricant upon differentiation of the interaxle differential mechanism. The discharge of the pump commu-

nicates with passageways which direct pumped lubricant to relatively moving parts of the interaxle differential. The pump discharge is throttled by these passageways so that the



back pressure of the oil impedes the operation of the pump. The pump is then effective to transmit torque between relatively moving parts of the interaxle differential to limit slipping of the differential.

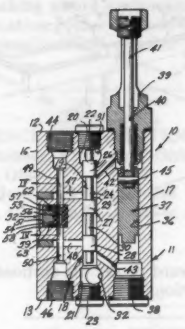
3,590,955
ENGINE OIL PAN
John C. Rau, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 19, 1969, Ser. No. 886,712
Int. Cl. F01m *11/06*
U.S. Cl. 184—6 B **6 Claims**



An oil pan assembly for the combustion engine in a motor vehicle in which an oil pan of suitable configuration is provided with baffles therein to provide an upper oil collecting chamber and a lower sump chamber in communication with each other through float valve controlled drain openings, the float valves being responsive to the relative oil level in the sump chamber.

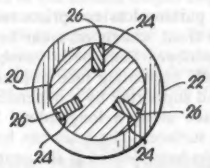
3,590,956
CROSSOVER VALVE FOR LUBRICANT DISTRIBUTOR
Ronald F. Obergefell, Cleveland, Ohio, assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Apr. 9, 1969, Ser. No. 814,717
Int. Cl. F16n *7/14*
U.S. Cl. 184—7 **5 Claims**

A lubricant distributor for receiving lubricant under pressure from a source and for dividing, metering and directing the lubricant to a plurality of points of use. The lubricant distributor includes a plurality of cylinder piston units in which the pistons are moved reciprocally back and forth by the pressurized lubricant Pairs of outlets corresponding in number to the number of cylinder piston units communicate with the opposite end of the cylinder and serve to discharge lubricant alternately therefrom as the pistons are moved back and forth. Passages are formed in the distributor for cross-connecting the two outlets associated with each cylinder piston unit and a selector valve is associated with each cross connection passage to block or unblock flow therethrough. Each selector valve is carried in a corresponding bore in the



distributor for rotation only, and is restrained against axial movement.

3,590,957
DISTRIBUTION OF SOLID LUBRICANTS HAVING FUSIBLE BINDERS
Mahlon E. Campbell, Merriam; Vernice Hopkins, Overland Park, and Roger J. Schroeder, Overland Park, all of, Kans., assignors to Midwest Research Institute, Kansas City, Mo.
Filed Nov. 25, 1968, Ser. No. 778,553
Int. Cl. F16n *15/00*
U.S. Cl. 184—99 **9 Claims**

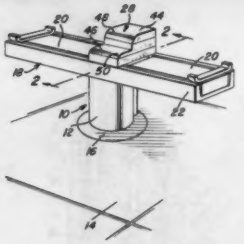


A solid lubricant having a low fusion temperature binder is applied to the wear surface of a machine element by transferring the lubricant from a reservoir disposed such that the lubricant is in heat exchange relationship with the element. The melting temperature of the lubricant binder is greater than the normal operating temperature of the element, thus melting of the binder and attendant transfer of the lubricant, such as by flow thereof in the melted state, occurs when the element develops excessive heat due to lubrication depletion. Depending on the melting temperature of the binder, the solid lubricant may be employed for primary lubrication or utilized as a backup lubricant which is distributed on the wear surface in the event of depletion of the primary lubricant.

3,590,958
ADAPTER BLOCK FOR VEHICLE LIFTS
Lloyd F. Elswick, 1543 Lime St., Clearwater, Fla.
Filed June 6, 1969, Ser. No. 831,002
Int. Cl. B66f *7/00*
U.S. Cl. 187—8.74 **3 Claims**

A front-to-rear reversible spacing block for disposition in the center upwardly opening recess of the saddle atop a vehicle lift post. The lower portion of the block is contoured to snugly seat in the recess and the upper portion of the block includes downwardly facing surfaces for resting upon the

upper surfaces of the saddle disposed about the recess. Further, the exposed upper portion of the block is stepped



for adapting to forward center lift portions of various vehicles in reversed positions of the block.

3,590,959

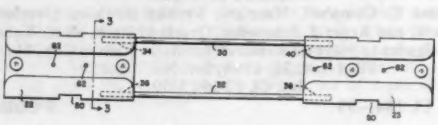
BUMPER FOR AUTOMOBILE PARKING LOTS

Matthew E. Ferketich, Southampton, Pa., assignor to Robinson Steel Company, Philadelphia, Pa.

Filed July 23, 1969, Ser. No. 844,081

Int. Cl. B60t *3/00*

U.S. Cl. 188—32 **1 Claim**



A bumper for parking lots comprises two body members for engaging the front wheels of a car being parked, connected by rod members. Each body member has a substantially flat forwardly presenting face disposed at an angle to the horizontal and supported by a depending web extending from the rear face along a longitudinal line between the upper and lower surfaces. The body can have two faces and two webs the webs being joined at the center and a plurality of holes being provided at the junction to accommodate pins to fix the bumper in position on the parking lot.

3,590,960

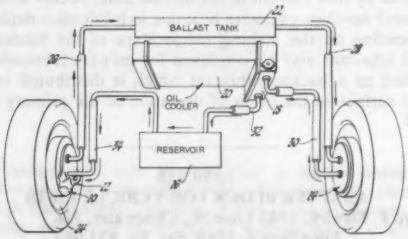
BRAKE FLUID COOLING ARRANGEMENT

Donald W. Reynolds, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 2, 1969, Ser. No. 829,572

Int. Cl. F16d *65/84*

U.S. Cl. 188—71.6 **12 Claims**



Fluid cooled brake cooling systems in each of which a plurality of vehicle wheel brakes are connected in series in a cooling circuit. In each system disclosed the circuit includes a pump driven by one of the wheels. In one embodiment the pump moves cooling fluid through a ballast tank, another wheel brake, a heat exchanger, and a cooling fluid reservoir. The fluid from the reservoir is returned to the wheel brake having the pump as a part of the brake assembly. In another embodiment, the pump driven by one of the wheels having a first brake to be cooled moves heated fluid from the first brake through a heat exchanger which cools the fluid, to a second wheel brake to be cooled where the fluid receives heat, then through the heat exchanger to again cool the fluid, after which this cooled fluid is returned to the brake with the pump. A cooling fluid reservoir is connected with the line connecting the pump output and the heat exchanger so that the reservoir can receive fluid from this point and a vent is provided. The reservoir outlet is connected at two points in the circulation system, these two points being between the two outlet points of the heat exchanger and the brake to which fluid flows from each outlet point. The wheel driven pump provides for circulation of cooling fluid through the entire system.

3,590,961

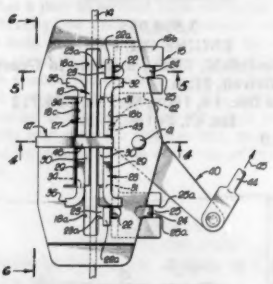
CLOSED LOOP CALIPER TYPE DISC BRAKE AND SUPPORT MEANS THEREFOR

Franklin B. Airheart, Granada Hills, Calif., assignor to Airheart Products, Inc., Van Nuys, Calif.

Filed Apr. 3, 1969, Ser. No. 813,262

Int. Cl. F16d *65/00*

U.S. Cl. 188—73.4 **11 Claims**



The disclosure concerns a disc brake assembly of low-cost construction, as for example making use of metal stampings, and wherein a clamping part or parts including linings may be dropped into place in support members for retention, such members being themselves retained against separation while free for relative lateral shifting bringing the clamping parts into clamping engagement with opposite faces of a rotor.

3,590,962

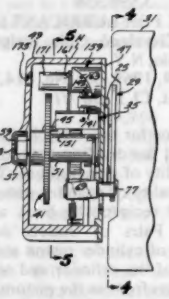
METERING BRAKE

Tommy M. Parker, Lakewood, and Anthony R. Ford, West Covina, both of, Calif., assignors to Marvin Dizack, Seymour Grubman, and Stanford Tabb, by said Parker

Filed Jan. 6, 1969, Ser. No. 812,504

Int. Cl. B60t *7/18*

U.S. Cl. 188—111 **10 Claims**



A metering brake including a housing mountable on the frame of a shopping cart wheel. A locking pin projects

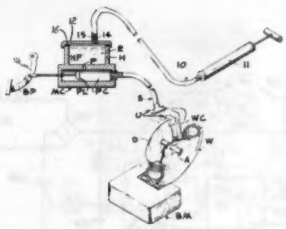
through the housing and is biased to engage a stop carried on the wheel but is held from such engagement by a pivotal holding bracket. Metering means within the housing includes a cam follower driven by a cam mounted on the wheel and, after a predetermined distance, moves a trip element into engagement with the holding bracket to release the lock pin to engage the stop thereby braking the cartwheel. An actuator is provided for actuating the metering means as the cart leaves the store and reset means is provided for retracting the lock pin and resetting the metering means when the cart is retrieved.

3,590,963

METHOD AND APPARATUS FOR FREEING WHEELS HAVING DISC BRAKES

Dennis Wright, Altoona, and James T. Winkles, Center, both of, Ala., assignors to Harold D. Harvey, Calhoun County, Ala.

Filed Apr. 10, 1969, Ser. No. 814,899
Int. Cl. B60t *11/30*
U.S. Cl. 188—152 **10 Claims**



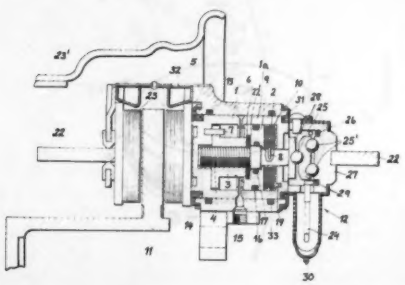
Method and apparatus for freeing vehicular wheels having disc brakes for rotation wherein the method includes the step of imposing a vacuum on the fluid in the wheel cylinder to release the braking pad from the disc so that the disc and wheel assembly can be freely rotated. The apparatus includes a cover for the master cylinder of the braking system and a vacuum pump operatively associated with the cover whereby a vacuum exerted by the pump is imposed on the hydraulic fluid in the braking system to withdraw the braking pad from the disc.

3,590,964

SPRING-LOADED ADJUSTMENT MECHANISM FOR HYDRAULIC DISC BRAKE

Gerhard Krause, Frankfurt am Main, Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Germany

Filed Oct. 25, 1968, Ser. No. 770,749
Claims priority, application Germany, Dec. 12, 1967, T 35 459
Int. Cl. F16d *65/56, 55/18*
U.S. Cl. 188—196 **10 Claims**



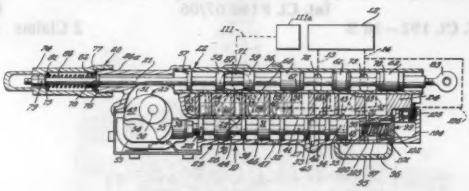
A spring-loaded adjustment mechanism for a hydraulic disc brake is provided with a threaded member acting upon the brake piston and rotatable to displace this piston and adjust the brake. A spiral spring engages this member and is prestressed so as to turn the member in the adjusting sense on increase of brake play beyond a predetermined limit to reset the original brake play be resetting the rest position of the piston. A blocking piston is clampingly engageable with the spring on actuation of the brake to immobilize it so that no rotation of the adjustment member is possible with the brake actuated.

3,590,965

SEQUENCE AND DIRECTION VALVE

Frank L. Oppenheimer, Cincinnati, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed June 10, 1969, Ser. No. 831,967
Int. Cl. F16d *71/04*; B64c *13/36*
U.S. Cl. 192—3 **9 Claims**



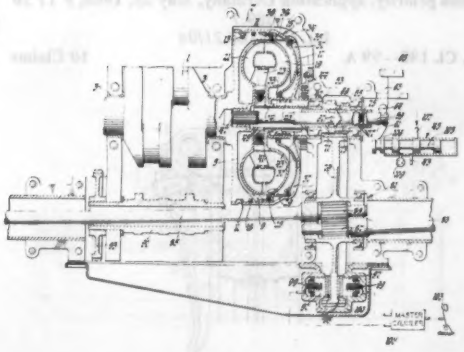
A valve assembly adapted to control rotary actuators by providing velocity reduction and stopping function to the actuator and thereby greatly enhancing the positional accuracy of the rotary actuator to duplicate the velocity reduction and stopping characteristic of a linear actuator. The valve assembly includes a directional control spool valve and a sequence control spool valve which is to slow and stop the actuator at the end of the desired output displacement. In the preferred embodiment, the valve assembly also controls the engagement and disengagement of a braking means associated with the actuator and includes means to control the speed of travel of the actuator in one direction by applying a variable back pressure on the exhaust line from the actuator.

3,590,966

HYDRODYNAMIC TORQUE TRANSMITTING UNIT WITH FLUID

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1969, Ser. No. 805,745
Int. Cl. F16d *67/00*; F16h *57/10*
U.S. Cl. 192—3.33 **4 Claims**



Power transmission in which the input rotor of a hydrodynamic torque-transmitting unit and a rotatable trans-

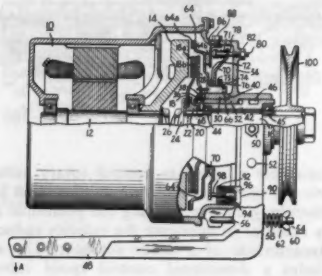
mission input are selectively clutched and unclutched to control power flow through the unit. Controls associated with a gear selector mechanism for forward and reverse gearing effect the momentary disconnection of the input rotor and the transmission input when shifting gears. Disc brakes selectively engageable with the differential input provide vehicle service brakes. The housing of the torque-transmitting unit is rigidly connected to the transmission input by deforming a portion of the housing into appropriate openings formed in the transmission input.

3,590,967

MAIN CLUTCH WITH ELECTRIC AUXILLIARY CLUTCH AND BRAKE

Sadayuki Kajitani; Masahiro Yokoyama, and Katsuhiko Eguchi, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 7, 1969, Ser. No. 839,403
Claims priority, application Japan, July 9, 1968, 43/58316
Int. Cl. F16d *67/06*
U.S. Cl. 192—18 B **2 Claims**



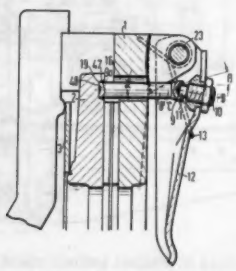
A main clutch engages a flywheel on a motor to drive an output shaft at a high speed. To decelerate the shaft, the main clutch disengages from the flywheel while simultaneously an electromagnet is energized to engage an auxiliary clutch with a flywheel. That clutch drives the main clutch through a brake disc with slip permitted between the main clutch and disc. When the electromagnet is deenergized the auxiliary clutch disengages from the flywheel and engages a brake shoe resulting in its stoppage.

3,590,968

RELEASE MECHANISM IN A FRICTION CLUTCH

Richard Binder, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed May 22, 1969, Ser. No. 826,948
Claims priority, application Germany, May 25, 1968, P 17 50 689.7
Int. Cl. F16d *21/06*
U.S. Cl. 192—99 A **10 Claims**



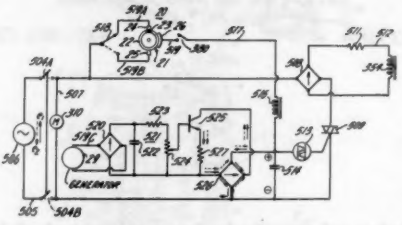
Movement of each clutch release lever mounted on the casing of a friction clutch is transmitted to the pressure plate of the clutch by a motion transmitting train which includes an axially elongated pin interposed between the associated lever and the pressure plate between two knife-edge bearings. Each bearing consists of a frustoconical recess in one of the connected members and a bearing pin on the other member. The convexly arcuate edge about the circular end face of the pin is the knife edge of the bearing, which engages the concavely arcuate intersection between the frustoconical wall and the bottom wall of the recess.

3,590,969

FIXED POINT STOP MECHANISM FOR DRIVEN ROTARY MACHINE

Sadayuki Kajitani; Masahiro Yokoyama, and Yukio Kajino, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1969, Ser. No. 828,844
Claims priority, application Japan, June 3, 1968, 43/37935
Int. Cl. F16d *71/04*; D05b *69/26*
U.S. Cl. 192—146 **7 Claims**



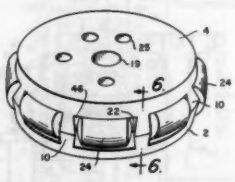
An electric motor puts a sewing machine in its normal operation through a clutch. Upon stopping the machine, a transistor and a capacitor fire a thyristor to permit the energization of an electromagnet. This causes the clutch to be partly braked to put the machine in sustained rotation at a low speed. When a position sensor senses the machine being at a selected one of its predetermined positions the electromagnet is deenergized to stop the machine at that selected position through the operation of the brake.

3,590,970

CONVEYOR ROLLER

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

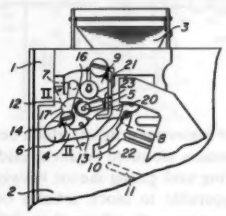
Filed Dec. 9, 1968, Ser. No. 782,038
Int. Cl. B65g *13/00*
U.S. Cl. 193—37 **22 Claims**



A conveyor roller comprising a hub and a plurality of rollers mounted in the periphery of the hub. In some forms of

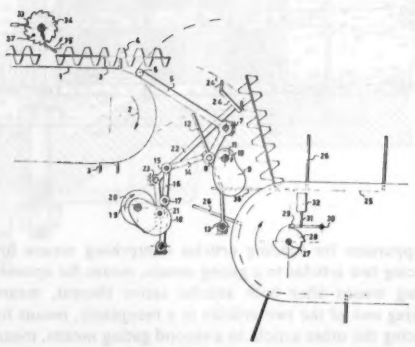
the invention the hub is divided into two segments on one or more planes normal to the axis of rotation. The segments are contoured to define bearings and pockets for the mounting of the rollers when secured together. In other forms of the invention the hub is divided into three segments on two or more planes normal to the axis of rotation. The segments are contoured to define bearings and pockets for the mounting of the rollers when secured together. The rollers are arranged in parallel planes and are circumferentially staggered to provide a continuous support for the load. The hub members and rollers are preferably formed by moulding of synthetic plastics.

3,590,971
CRADLE FOR COIN SORTER
Wilson M. Stewart, 110 Isabella St., Ottawa, Ontario, Canada
Filed Aug. 21, 1969, Ser. No. 851,929
Claims priority, application Canada, Apr. 14, 1969, 048,657
Int. Cl. G07f *3/02*
U.S. Cl. 194—103 2 Claims



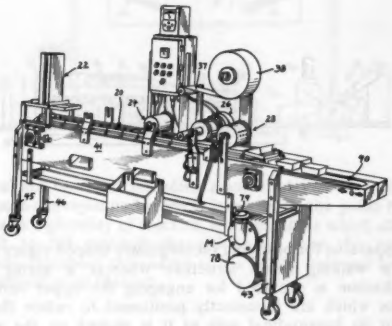
A cradle for use in a coin sorter is provided with an adjustable biassing weight so that coins of less than an acceptable weight can be prevented from rocking the cradle.

3,590,972
DEVICE FOR STACKING EGG-TRAYS
Jacob H. Mosterd, c/o Apparatenbouw MOBA N.V., Stationsweg 117, Barneveld, Netherlands
Filed Apr. 8, 1969, Ser. No. 814,369
Claims priority, application Netherlands, Apr. 8, 1968, 68/04963
Int. Cl. B65h *3/30*
U.S. Cl. 198—20 6 Claims



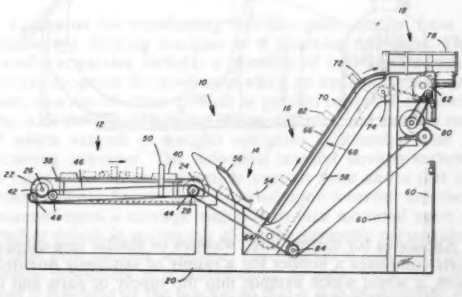
The invention relates to a device for handling mainly flat objects, which device has a supply belt, a swinging member for lifting an edge of a flat object protruding from the output end of the supply belt to inverse said object, a swingable flap for receiving the objects and bringing them into a standing position unto a transport belt, as well as means for backing the object for preventing it from falling back when moved unto said transport belt.

3,590,973
CONVEYOR WITH CONTAINER EJECTOR
Robert P. Sorensen, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.
Division of Ser. No. 554,284, May 24, 1966, Pat. No. 3,436,894.
Filed Oct. 14, 1968, Ser. No. 767,274
Int. Cl. B65g *47/00, 15/00*
U.S. Cl. 198—25 6 Claims



A packaging machine has a conveyor which advances a number of containers from a container denester past a filler, sealing head, and cutter. The conveyor has a plurality of pivotally interconnected pockets which have open bottoms. At the outlet end of the conveyor are provided a plurality of shoes which move through the open bottom of the pockets to eject the containers.

3,590,974
DESCRAMBLER
Marion W. Loveless, 419 South Allegheny, Tulsa, Okla.
Filed Aug. 4, 1969, Ser. No. 847,259
Int. Cl. B65g *47/00, 47/30*
U.S. Cl. 198—30 4 Claims



In an apparatus for the descrambling and aligning of paramagnetic cans, an elevator conveyor has a magnetic

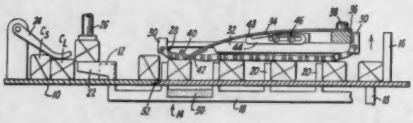
plate directly beneath the upper flight of the belt, the magnetic plate having an upper end contoured so as to be in a plane substantially tangential to the upper roller so that the cans riding on the elevator conveyor are held in an upright position by the magnetic attraction force of the magnetic plate and are conveyed onto a discharge conveyor in the same upright position.

3,590,975

CIGAR CONVEYOR

Frank Hollenton, Richmond, Va., assignor to AMF Incorporated

Filed Jan. 28, 1969, Ser. No. 794,638
Int. Cl. B65g 47/14
U.S. Cl. 198—33 AD **9 Claims**



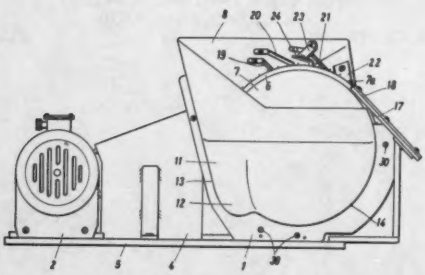
Apparatus for orienting rectangularly shaped cigars carried on a walking beam structure wherein a spring finger mechanism is provided for engaging the upper surface of cigars which are incorrectly positioned to rotate the cigar about its longitudinal axis as it is moved on the walking beam.

3,590,976

APPARATUS FOR SORTING RING-SHAPED PARTS

Richard Weiss, Egesheim; Heinz Neumann, Spaichingen, both of, Germany, assignors to Richard Weiss OHG, Egesheim, Germany

Filed Apr. 22, 1969, Ser. No. 818,354
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA **10 Claims**



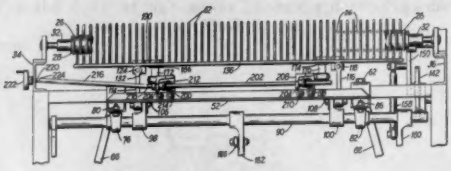
Apparatus for sorting nuts, washers or similar ring-shaped parts comprises a hopper for a supply of randomly oriented parts, a wheel which extends into the supply of parts and is provided with radial pins which spear the parts during travel through the hopper, and a chute extending tangentially of the wheel and positioned to receive speared parts from the pins. The wheel is provided with blades which agitate the contents of the hopper, and the hopper carries leaf springs which separate improperly engaged parts and orient partially speared parts prior to transfer into the inlet of the chute.

3,590,977

VARIABLE INDEX FINGER ASSEMBLY

Arthur Stanford, Richmond, Va., assignor to AMF Incorporated

Filed June 2, 1969, Ser. No. 829,564
Int. Cl. B65g 47/26
U.S. Cl. 198—34 **1 Claim**



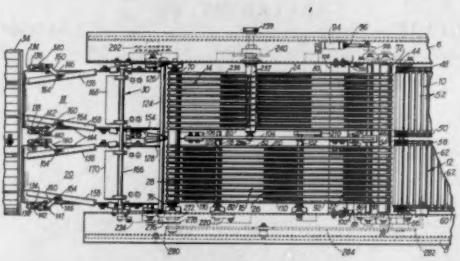
Apparatus for metering articles, which comprises conveyor means, gating means mounted adjacent said conveyor means, means for moving said gating means between a first position whereat it is operable to block articles being advanced by said conveyor means and a second, inactive, position, and means for adjusting the position of said gating means longitudinally with respect to said conveyor means.

3,590,978

AUTOMATIC LOADING APPARATUS

Roy W. Carnes, Henrico County; Fred D. Marasso, Richmond, and Robert E. Rademacher, Henrico County, all of, Va., assignors to AMF Incorporated

Filed Sept. 27, 1968, Ser. No. 763,099
Int. Cl. B65g 57/081
U.S. Cl. 198—35 **4 Claims**



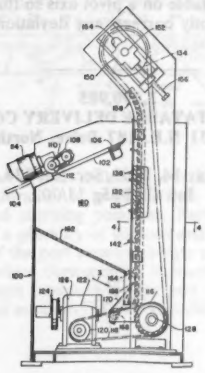
Apparatus for loading articles comprising means for advancing two articles to a gating means, means for opening the gating means after both articles arrive thereat, means for placing one of the two articles in a receptacle, means for advancing the other article to a second gating means, means for moving the receptacle to a position opposite the last named advancing means, means for opening the second gating means in a timed relationship to the receptacle advancing means and means for placing the other article in said receptacle.

3,590,979

MECHANICAL PART FEEDER

Fritz J. Lupo, Bloomfield Hills, Mich., assignor to Feedmatic-Detroit, Inc., Southfield, Mich.

Filed Aug. 26, 1968, Ser. No. 755,121
Int. Cl. B65g 47/18
U.S. Cl. 198—53 3 Claims



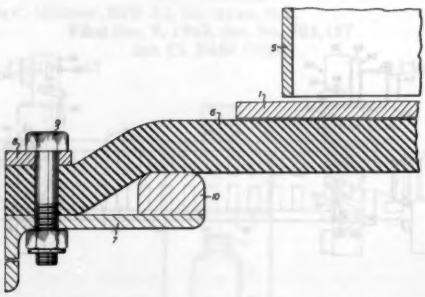
A feeder for distributing small parts such as nuts, to a multiplicity of separate feed tracks. The articles are elevated along the underside of an inclined mechanical conveyor or belt on which they are distributed substantially uniformly across the width thereof, and are permitted to drop from the belt onto the feed tracks.

3,590,980

CONVEYER BELT SUPPORTS

Bengt Lennart Bengtsson, Sperlingevagen 11, 260 36, Hittarp, Sweden

Filed May 19, 1969, Ser. No. 825,888
Claims priority, application Sweden, May 22, 1968, 6944/68
Int. Cl. B65g 47/18
U.S. Cl. 198—57 2 Claims



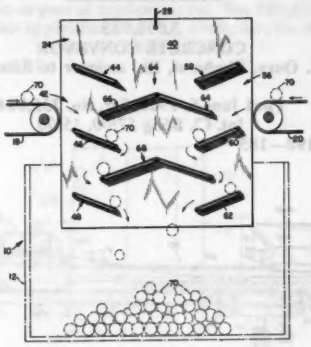
In a belt conveyor where the belt consists of rubber or like material, that part of the conveyor belt where the material to be conveyed is dropped onto the belt, is supported by a mat of elastic material to prevent damage to the belt, the mat being secured outside the edges of the conveyor belt.

3,590,981

GUIDE WITH ENERGY-ABSORBING BAFFLES

Philip R. Adrian, Escalon, Calif., assignor to Fruit Harvesting Co., Inc., Escalon, Calif.

Filed May 1, 1969, Ser. No. 821,004
Int. Cl. B65g 47/44, 11/08
U.S. Cl. 198—72 3 Claims



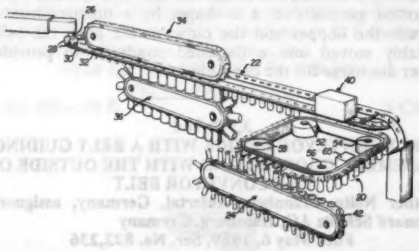
An orchard harvester including a guide adapted to receive fruit from a conveyor and guide it into a crate, the guide having thereon a plurality of stacked, spaced baffles which allow the fruit to fall through the guide and into the crate, meanwhile absorbing the energy of the falling fruit and limiting the acceleration thereof.

3,590,982

ARTICLE TRANSFER APPARATUS

John D. Banyas, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed May 19, 1969, Ser. No. 825,850
Int. Cl. B65g 15/00
U.S. Cl. 198—179 13 Claims



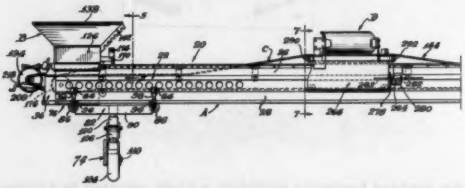
Apparatus for transferring bulblike glass articles from a ribbon-type forming machine to a receiving conveyor. The transfer apparatus includes a plurality of individual transfer devices mounted for movement along an endless rectangular path, one run of which extends in parallel operative relationship with the article-forming ribbon machine and another run of which extends in parallel operative relationship with a receiving conveyor. The individual transfer devices include an open-ended U-shaped article support yoke and a pair of article retainer fingers both mounted upon a carrier member mounted upon a carriage which is in turn mounted upon a bracket driven in movement along the generally rectangular endless path referred to above. The bracket is supported for vertical movement as it moves along its path, while the carriage is mounted on the bracket so that it may be extended or withdrawn horizontally in a direction normal to the path of movement of the bracket along its endless path. The carrier is in turn slidably mounted on the carriage for sliding movement parallel to the path of movement of the carriage on the bracket Movement of the carrier relative to the bracket is

confined to a range less than that of the movement of the carriage relative to the bracket, the excess movement or overtravel of the carriage as compared to the carrier being employed to open and close the retainer fingers at selected portions of the endless path. Vertical movement of the bracket and extending or withdrawing movement of the carriage upon the bracket is accomplished by means of cams mounted upon the frame of the transfer machine.

3,590,983
CONCRETE CONVEYOR

Robert F. Oury, Elmhurst, Ill., assignor to Rotec Industries, Inc.

Filed June 6, 1968, Ser. No. 735,004
Int. Cl. B65g *57/00, 15/00*
U.S. Cl. 198—185 **22 Claims**

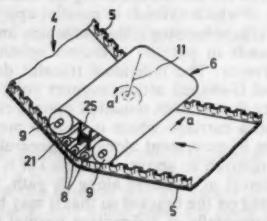


A conveyor mechanism particularly for conveying concrete mix from one place to a place of use. An elongated and movable support frame of unique design is provided and serves several functions, including support of the conveyor mechanism and variable adjustment for the idlers supporting a belt conveyor, and it also includes enclosed chambers for cables, drive chains, and the like. The frame has a hopper at one end for receiving relatively large quantities of concrete. A belt conveyor is movably carried on the frame and moves the concrete from the hopper to the desired place of use. A plow is movably mounted on the frame and the path of travel of the concrete mix carried on the conveyor is intercepted by the plow and is diverted laterally from the longitudinal axis of the conveyor to the place of desired use. The belt conveyor is supported generally in a U-shape, by a unique structure, between the hopper and the plow; at the plow the belt is desirably moved into a flattened condition to provide a proper discharge for the concrete mix.

3,590,984
BELT CONVEYOR DEVICE WITH A BELT GUIDING ASSEMBLY COOPERATING WITH THE OUTSIDE OF THE CONVEYOR BELT

Gunther Nolte, Mannheim-Kafertal, Germany, assignor to Conard Scholtz AG, Hamburg, Germany

Filed May 6, 1969, Ser. No. 822,236
Claims priority, application Austria, May 15, 1968, A4661-68
Int. Cl. B65g *15/62*
U.S. Cl. 198—202 **9 Claims**



A belt conveyor device including a conveyor belt, which has a raised strip along each edge on one surface for laterally confining material being transported on the belt, moving along a path having straight portions interconnected by a curved portion and a belt guiding assembly for guiding the conveyor belt through the curved portion of the path. The belt guiding assembly includes a pair of end rollers and intermediate rollers which are rotatably journaled in a housing and extend across the width of the conveyor belt. A cover belt is supported on the rollers to travel in an arcuate path while contacting the edge strips of the conveyor belt moving through the curved portion of the path. The housing is mounted to be rotatable on a pivot axis so that the belt guiding assembly promptly corrects any deviation in the path of the conveyor belt.

3,590,985
AXIALLY ROTATABLE DELIVERY CONVEYOR

Jerome Hirsch, 1931 N.E. 187 Drive, North Miami Beach, Fla.

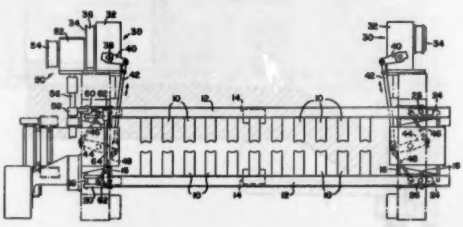
Filed May 14, 1969, Ser. No. 824,558
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **9 Claims**

An axially rotatable delivery conveyor including interconnected straight lengths and curved lengths in which the lengths include an inner core and an outer core having a cylindrical surface coaxial with respect to the axis of rotation of the delivery conveyor and in which outer cylindrical surface a spiral track is provided of an area substantially less than the outer surface so that the conveyor is adapted to be supported by bearing means engaging the smooth outer surface on rotation of the conveyor to travel hooklike articles having a bight portion engaged in the spiral track; the curved lengths include a flexible inner core and the outer cylindrical surface is composed of interconnected links having an outer surface similar to that of the straight lengths, that is, cocylindrical and including the spiral track.

3,590,986
TRANSFER FEED

Ralph L. Andrews, and William Hollenbeck, both of Hastings, Mich., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Oct. 1, 1968, Ser. No. 764,248
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **2 Claims**



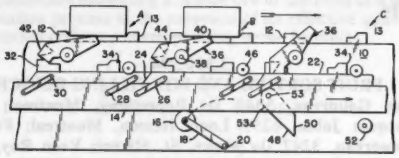
A transfer feed in which the work gripping fingers are connected to a pair of feed bars. The bars are supported intermediate their ends and at their ends for sliding lateral and longitudinal movement. Cam units are connected to the bars at either end to effect the lateral movement and a third cam unit connected to one end of the bars effects longitudinal movement. No torsional forces are imposed on the bars thus permitting the feeding of heavier parts than has been possible with other types of feeds.

3,590,987

LIFT AND CARRY ACCUMULATOR

Dewey M. Evans, Farmington, and Peter J. Manetta, Warren, both of, Mich., assignors to Simplex Corporation, Detroit, Mich.

Filed Sept. 17, 1969, Ser. No. 858,835
Int. Cl. B65g 25/04
U.S. Cl. 198—219 10 Claims



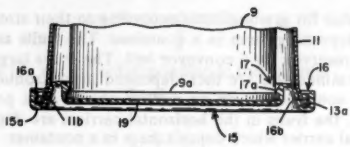
An accumulator system including a walking beam transfer bar having a plurality of part carriers movable thereon between idle and carrying positions. Part sensors are provided at each of a plurality of stations and means responsive to the position of the part sensors elevate selected carriers to part carrying position during initial forward movement of the transfer bar. Means interconnect the part carriers so that all carriers in rear of an empty station are shifted to part carrying position.

3,590,988

DISPLAY AND SHIPPING CONTAINERS

Bartley Douglass Hollar, Longmont, Colo., assignor to Gould-National Batteries, Inc., St. Paul, Minn.

Filed Jan. 3, 1969, Ser. No. 788,714
Int. Cl. B65d 25/00
U.S. Cl. 206—45.34 3 Claims



A display and shipping container having a transparent housing that forms locking engagement with a base member having an inner product engaging ring for holding the product securely within the container.

3,590,989

PROTECTIVE BOTTLE DISPLAY AND SHIPPING CONTAINER

John C. Wittwer, RFD #2, Mt. Kisco, N.Y.

Filed Dec. 9, 1968, Ser. No. 782,157
Int. Cl. B65d 79/00
U.S. Cl. 206—47 4 Claims

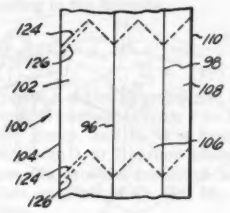
A clear plastic container having a base configured to define an item-receiving compartment having an open end. Shock absorbing material is introduced into the open lower end after which the lower end is sealed. The item is carried within the sealed recess is thus protected against shock and vibration during handling and transmit.

3,590,990

ROLLED GARMENT HOLDING BAG MATERIAL

David Rubin, 900 Whitmore, Detroit, Mich.

Continuation-in-part of application Ser. No. 752,337, Aug. 13, 1968. This application Mar. 21, 1969, Ser. No. 809,120
Int. Cl. B65d 85/18
U.S. Cl. 206—59 F 3 Claims



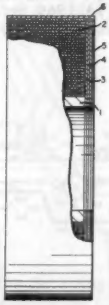
A prefolded roll of film material for garment holding bags is folded along a pair of longitudinally extending folded edges forming three longitudinally extending portions. One portion is disposed between the two folded edges. The remaining two portions are folded over the first portion so as to be disposed adjacent one another. In a second embodiment a fourth portion extends from a third longitudinally extending folded edge for forming garment bags with inner and outer pockets. In the alternative, rolls of completed bags may be formed by perforating, folding and seaming the strip of material before it is put into rolls.

3,590,991

PACKAGING MATERIAL AND PACKAGE: USEFUL IN PACKAGING ORIENTED PLASTIC STRAPPING

William H. Sloan, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 25, 1969, Ser. No. 819,300
Int. Cl. B65d 85/676
U.S. Cl. 206—59 C 3 Claims



A packaging material consisting essentially of a layer of plasticized polyvinyl butyral resin next to a layer of aluminum foil which is next to a layer of material selected from the class consisting of cellulosic material and polymeric material, and a moisture impregnable and compression fixa-

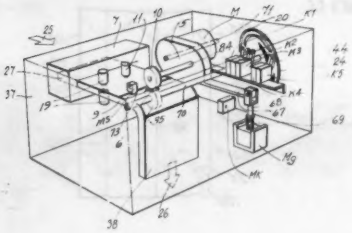
ble package which utilizes the packaging material and is useful in packaging polyamide strapping, leaving no residue on the strapping after the strapping is unreeled.

3,590,992

METHOD AND APPARATUS FOR EXAMINING AND IDENTIFYING BANKNOTES AND THE LIKE

Karl Gunnar Rune Soderstrom, Skebokvarnsvagen 151, Bandhagen, Sweden

Division of Ser. No. 529,644, Nov. 7, 1966, Pat. No. 3,448,855.
Filed Jan. 30, 1969, Ser. No. 795,215
Int. Cl. B07c *5/06*
U.S. Cl. 209—73 6 Claims



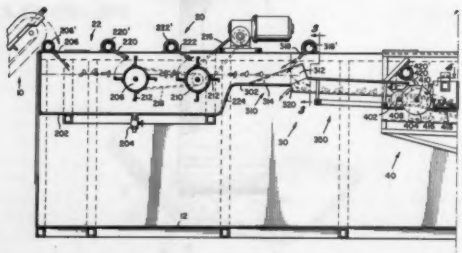
The disclosure involves a method for checking banknotes or the like in a checking station which includes the step of gauging mechanical dimensions at at least one distinguishing area of the banknote. The gauged values obtained are compared with standard signals and a comparison signal produced which is then utilized to distinguish between genuine banknotes and forged or damaged banknotes. The disclosure also involves an apparatus for checking banknotes or the like and for passing genuine notes to an item dispensing device. The apparatus includes a gauging means for gauging mechanical dimensions at least one distinguishing area of the banknote. A comparator means is used for comparing the gauged values with standard values so as to produce a comparison signal. Utilizing means are provided which are responsive to said comparison signal to differentiate between genuine and forged or damaged banknotes. Means are provided for passing the genuine notes to a collection station and for returning notes which are forged or damaged.

3,590,993

MUSHROOM GRADER

William H. Baker, Wilmington, Del., assignor to American Specialty Foods, Inc., Wilmington, Del.

Filed Mar. 13, 1969, Ser. No. 806,991
Int. Cl. B07c *1/04*
U.S. Cl. 209—73 18 Claims



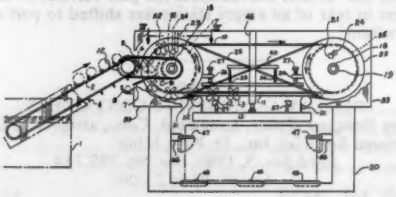
A device for continuously grading uncut mushrooms according to size is provided wherein the mushrooms are moved hydraulically at a controlled rate past a plurality of stations. At each station the mushrooms are aligned axially into rows and are then serially graded into three different sizes before moving on to the next station. Each size grader comprises a pair of rotating capstan wheels which define a circular opening therebetween so that the axially aligned mushrooms which are undersize fall through the circular opening, while those of the selected grade, having a cap diameter too great to fit through the opening, pass over the downstream capstan wheel and are thereby graded according to size.

3,590,994

FRUIT SORTING AND BOX FILLING DEVICE

Roger Goudreau, 5342 De Repentigny, Montreal; Jean-Jacques Jobin, 6259 Louis Hemon, Montreal; Fernand Goudreau, 3247 Du Maire, St. Michel; Yvon Roy, 5312 Paimpol, St. Leonard, and Luigi Vaccaro, 7270 Vannes, St. Leonard, all of, Canada

Filed Apr. 18, 1969, Ser. No. 817,351
Claims priority, application Canada, Apr. 20, 1968, 017987
Int. Cl. B07c *1/14*
U.S. Cl. 209—73 13 Claims



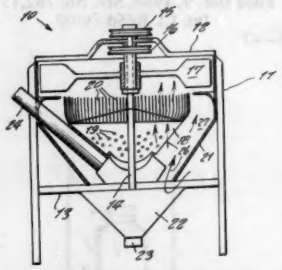
A device for grading fruits according to their sizes and for gently depositing them in a container. The fruits are picked up in a reservoir by a conveyor belt. The fruits larger than a predetermined size are then deposited in horizontal carriers moving continuously on an endless chain. At a position of transfer, the fruits in the horizontal carriers are deposited in a vertical carrier which deposit them in a container.

3,590,995

GRAIN CLEANER

Lyle F. Truckenbrod, Rural Route 1, Mendota, Ill.

Filed Aug. 11, 1969, Ser. No. 848,889
Int. Cl. B07b *4/08*
U.S. Cl. 209—140 3 Claims



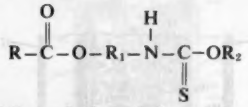
A machine for cleaning grain, the machine comprising a rotating, perforated cone into which uncleaned grain is placed; air blown upwardly through the perforations cause chaff and foreign particles to be blown upward through a fan, while the relatively heavier grain is thrown by centrifugal force sideward out of the cone in a clean condition.

3,590,996
FLOATATION OF SULFIDE ORES

Guy H. Harris, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 3, 1969, Ser. No. 796,159
Int. Cl. B03d *1/02;* **C07c** *153/07*
U.S. Cl. 209—166 **10 Claims**

An improvement in the concentration of ores by flotation which comprises subjecting a sulfide ore in the form of a pulp to a flotation process in the presence of an effective quantity of a flotation collector corresponding to the formula



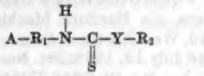
wherein R and R_2 are hydrocarbyl groups and R_1 represents an alkylene or heteroalkylene group. Certain of the indicted compounds provide for enhanced recovery and/or selectivity of sulfide minerals of Cu, Zn, Mo, Co, Ni, Pb and As over iron sulfide. The compounds are also useful as fungicides and herbicides.

3,590,997
FLOTATION OF SULFIDE ORES

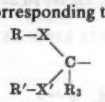
Guy H. Harris, Concord, Calif., and Terry D. Filer, Idaho Falls, Idaho, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 13, 1969, Ser. No. 799,071
Int. Cl. B03d *1/00;* **C07c** *153/00*
U.S. Cl. 209—166 **8 Claims**

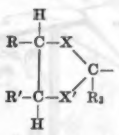
An improvement in the concentration of ores by flotation which comprises subjecting a sulfide ore in the form of a pulp to a flotation process in the presence of an effective quantity of a flotation collector corresponding to the formula



wherein A is a radical corresponding to the formula



or



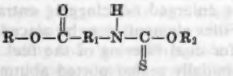
X and Y consist of —S— or —O—; R, R′ and R_2 are hydrocarbyl groups, R_1 is an alkylene group and R_3 is H or a lower alkyl group. Certain of the indicated compounds provide for enhanced selectivity and/or recovery of sulfide minerals of Cu, Zn, Mo, Co, Ni and Pb over iron sulfide.

3,590,998
FLOTATION OF SULFIDE ORES

David J. Collins, Walnut Creek, and Guy H. Harris, Concord, both of, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 3, 1969, Ser. No. 796,158
Int. Cl. B03d *1/02;* **C07c** *153/07*
U.S. Cl. 209—166 **6 Claims**

An improvement in the concentration of ores by flotation which comprises subjecting a sulfide ore in the form of a pulp to a flotation process in the presence of an effective quantity of a flotation collector comprising a compound corresponding to the formula



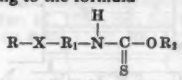
wherein R and R_2 are hydrocarbon groups and R_1 is an alkylene group. Certain of the indicated compounds provide enhanced recovery of and/or selectivity of sulfide minerals of Cu, Zn, Mo, Co, Ni, Pb and As over iron sulfide.

3,590,999
FLOTATION OF SULFIDE ORES

Wayne D. Gould, Miami, Ariz., and Guy H. Harris, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 13, 1969, Ser. No. 799,119
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **10 Claims**

An improvement in the concentration of ores by flotation which comprises subjecting a sulfide ore in the form of a pulp to a flotation process in the presence of an effective quantity of a flotation collector comprising a thiocarbamate compound corresponding to the formula

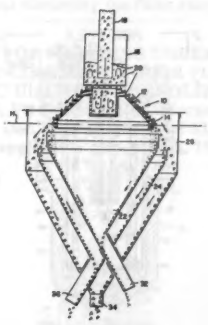


wherein X comprises a chelating group and R is hydrogen or a hydrocarbon radical containing from 1 to 10 carbon atoms; R_1 is an alkylene group, and R_2 is a hydrocarbon radical usually containing from 1 to 7 carbon atoms. Certain of the indicated compounds provide enhanced selectivity and/or recovery of sulfide minerals of Cu, Zn, Mo, Co, Ni, Pb and As over iron sulfide.

3,591,000
METHOD AND APPARATUS FOR SIZING AND SEPARATING SOLIDS

Ira B. Humphreys, 910 American National Bank Bldg., Denver, Colo.

Continuation-in-part of application Ser. No. 697,166, Jan. 11, 1968, now abandoned. This application Oct. 27, 1969, Ser. No. 871,452
Int. Cl. B03b *3/00*
U.S. Cl. 209—210 **8 Claims**



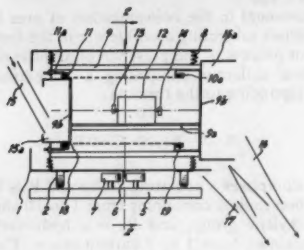
A method and apparatus for sizing and separating solid particulates through utilization of the Coanda effect obtained by introducing a liquid slurry containing suspended solid particulates of differing sizes and shapes therein onto a torus or curvilinear surface to enable the particulates to separate out of the slurry stream as the same flows over the torus and collecting the particulates in different zones corresponding to their zones of discharge from the slurry with the larger particulates being collected at the greatest distance tangentially from the torus.

3,591,001

SIFTING APPARATUS

Guy Quesnel, Gif, France, assignor to Stein & Roubaix, Paris, France

Filed Feb. 3, 1969, Ser. No. 796,039
Claims priority, application France, Feb. 9, 1968, 139277
Int. Cl. B07b 1/26
U.S. Cl. 209—287 3 Claims



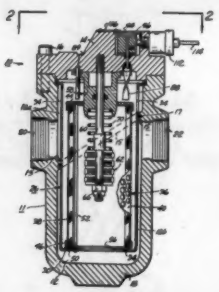
A sifting apparatus comprising screens arranged in polygonal formation within a rotary drum, the assembly of screens being resiliently suspended within the drum and subjected to vibration by a motor driving eccentric weights.

3,591,002

HIGH PRESSURE FLUID FILTER

Nils O. Rosaen, Bloomfield Hills, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 31, 1969, Ser. No. 795,629
Int. Cl. B01d 35/14
U.S. Cl. 210—90 11 Claims



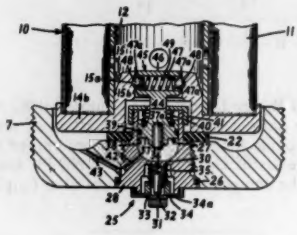
A high pressure fluid filter provided with a pressure responsive member adapted to remain in unchanged position as long as the pressure acting on both sides of the pressure responsive member is balanced but which, upon an unbalance on either side of the pressure responsive member due to a contaminated filter element, is caused to move towards the side where the pressure is less and to thereby mechanically actuate a visual indicator device to signal the particular condition of the filter element and to further provide a bypassing arrangement to bypass the filter element upon an extremely contaminated condition of the filter element.

3,591,003

DIFFERENTIAL PRESSURE-RESPONSIVE SIGNALLING DEVICE AND A FILTER ASSEMBLY HAVING SAME

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of application Ser. No. 812,166, Apr. 1, 1969. This application Feb. 11, 1970, Ser. No. 10,550
Int. Cl. B01d 27/10
U.S. Cl. 210—90 25 Claims



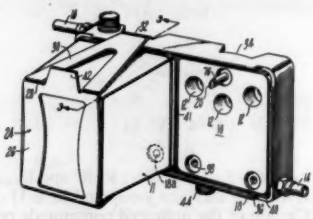
A differential pressure-responsive signalling device, such as a pressure indicator, and a filter assembly incorporating it, are provided, having locking means for holding the indicator in its actuated position until the indicator is released by the locking means automatically upon the removal of the filter element from its position in the assembly.

3,591,004

FUEL OIL FILTER DESIGN

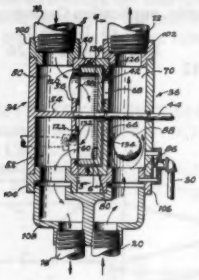
Vernon D. Roosa, c/o Hartford Machine Screw Company, P.O. Box 1440, West Hartford, Colo.

Filed July 12, 1968, Ser. No. 744,413
Int. Cl. B01d 27/06
U.S. Cl. 210—94 17 Claims



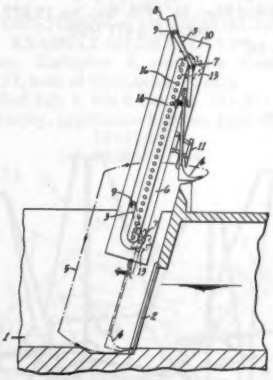
A form-sustaining disposable liquid fuel filter cartridge permanently confining a filter element has spaced apart noncoaxial ported resilient abutments on a flat wall of the cartridge housing facing in a common direction to provide a tripod mount for the cartridge and self-adjusting seals for the inlet and outlet passages provided by the ported abutments when the cartridge is mounted on its flat supporting base by a resilient sheet metal spring clamp exerting a biasing force offset from each of the abutments. The rectangular high capacity filter element within the cartridge is accordion pleated and longitudinally corrugated to bias the edges of the element against the walls of the cartridge to which the edges are bonded when the filter element is packed during assembly and to provide enlarged nonclogging entrance openings for the element. Filter elements may be placed in series in a single cartridge for dual filtering of the fuel and an automatically pierced initially sealed ported abutment used to keep contaminants out of the downstream side of the filter element before use.

3,591,005
WATER SOFTENER REGENERATOR VALVE
Hal Travers, Snyder, N.Y., assignor to Marine Midland Trust Company of Western New York, Buffalo, N.Y.
Filed Apr. 25, 1966, Ser. No. 546,056
Int. Cl. B01d *29/38*
U.S. Cl. 210—136 5 Claims



An automatic control valve for water softening systems employs a housing which contains a valve body and has chambers which are connected selectively by the valve body to effect the sequential stages of soft water supply, regeneration and backwash of the conditioning tank. The valve body is intermittently actuated by clock mechanism to effect the sequential stages.

3,591,006
RAKE CLEANING TOOL
Ignaz Daferner, Karlsruhe, Germany, assignor to Maschinenfabrik H. Geiger, Karlsruhe, Germany
Filed Oct. 4, 1968, Ser. No. 765,187
Claims priority, application Germany, Oct. 6, 1967, P 16 58 096.4
Int. Cl. B01d *35/00*
U.S. Cl. 210—159 5 Claims

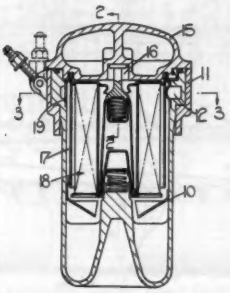


A cleaning apparatus for use in connection with a screen placed in a water-carrying flume comprising guide tracks, at least one rake adapted to move up and down in front of the screen to remove residual dirt therefrom, a movable driving element fixedly coupled to said rake and adapted to engage the guide tracks for movement thereon, wherein the guide tracks include ascending and descending guide track portions and the stationary driving element comprises a rack, the movable driving element comprising a driving gear coupled to the rack and a pair of guide rollers, one of the guide rollers being coupled to the driving gear and guiding it in one of the track portions during the upward movement of the rake and in the other of the track portions during the downward movement of the rake, the other of the guide rollers moving in one of the track portions during both of the up and down movements of the rake device, the guide tracks including a reversal portion at both ends thereof whereby a continuous path of movement results for the driving gear.

ERRATUM

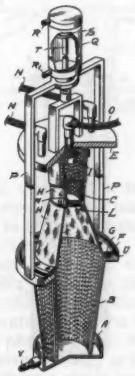
For Class 210—232 see:
Patent No. 3,591,580

3,591,007
LIQUID FILTERING EQUIPMENT
Harold Crowther, Solihull, England, assignor to Joseph Lucas Industries Limited, Birmingham, England
Filed Mar. 17, 1969, Ser. No. 807,498
Int. Cl. B01d *35/02*; B01d *29/42*
U.S. Cl. 210—234 16 Claims



A liquid filtering equipment has a body and a lid which respectively include an inlet and an outlet for the fluid to be filtered. A filter element is supported within the body between the inlet and the outlet. The body and lid together may be mounted in a support which also forms part of the equipment and which includes inlet and outlet passages with which the inlet and outlet in the body and lid respectively align. The body and lid may thus be removed as a unit from the support without disturbing the filter element.

3,591,008
APPARATUS FOR FILTERING UNDER PRESSURE LIQUIDS TO BE CLARIFIED AND/OR PURIFIED, WITH AUTOMATIC DISCHARGE OF SOLID RESIDUES
Attilio Diefenbach, Via Borgazzi n 90, Monza, Milan, Italy
Filed Dec. 9, 1968, Ser. No. 783,781
Claims priority, application Italy, Dec. 9, 1967, 23696A/67
Int. Cl. B01d *25/34*
U.S. Cl. 210—237 18 Claims



A press filter is formed of an outer filtering element concentrically arranged about an inner filtering element and

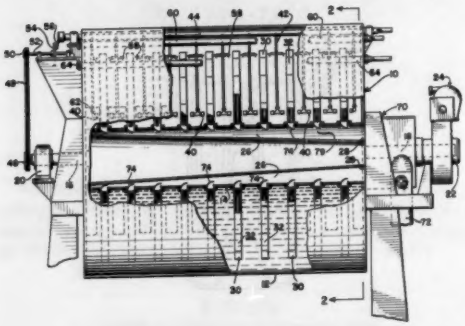
forming an annular space therebetween. A filtering cloth is located within the annular space and is attached to each of the filtering elements. The filtering cloth forms a chamber into which a liquid containing solid particles is charged, with the cloth removing the solids and the liquid passing through the cloth and the filtering elements. The filtering elements and the filtering cloth are axially displaceable between a filtering position and a discharge position where the solids are removed from the filtering cloth.

3,591,009

DISC FILTER HAVING FILTRATE DIRECTING MEANS

Oscar Luthi, 51 Browning Ave., Nashua, N.H., and James P. Ross, 24 Coles Grove, Derry, N.H.

Filed Aug. 22, 1969, Ser. No. 852,424
Int. Cl. B01d *33/38, 33/26*
U.S. Cl. 210—247 **8 Claims**



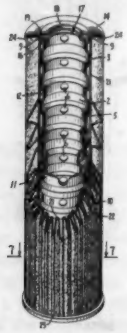
A disc filter wherein baffles are mounted on the core adjacent the connections of the filter disc passages to the core drainage passages, such baffles controlling the communication of the filter disc passages with the core outlet means and defining flow openings to equalize filtrate flow through each filter disc. The flow openings are located whereby filtrate discharged to the core passages from the filter disc passages flows in a direction towards the core outlet means.

3,591,010

FILTER HAVING A MICROPOROUS LAYER ATTACHED THERETO

David B. Pall, Roslyn Estates, and Cyril A. Keedwell, Jericho, N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Division of Ser. No. 637,850, May 11, 1967, Pat. No. 3,407,252 which is a continuation of Ser. No. 328,297, Dec. 5, 1963, abandoned. Filed June 10, 1968, Ser. No. 777,928
Int. Cl. B01d *27/06*
U.S. Cl. 210—493 **10 Claims**



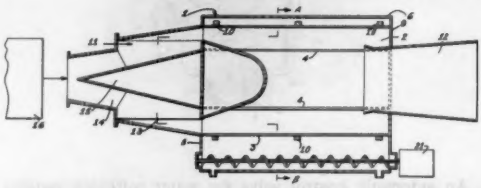
A corrugated filter element having a microporous layer deposited on a substrate sheet provided with portions of reduced porosity at the areas of the base folds of the corrugations.

3,591,011

APPARATUS FOR SEPARATING SOLID PARTICLES FROM A FLUID MEDIUM

Heinz Holter, Hochstrasse 37, and Heribert Dewart, Bahnhofstrasse 23, both of 4390 Gladbeck, Germany

Filed Oct. 13, 1969, Ser. No. 865,857
Claims priority, application Germany, Apr. 29, 1969, P 19 21 785.7
Int. Cl. B01d *21/26*
U.S. Cl. 210—512 **11 Claims**



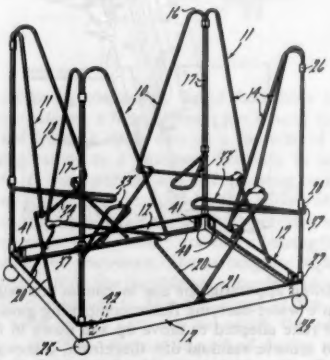
An elongated separation chamber for conducting a fluid medium and having a peripheral wall with discharge openings provided in this wall. A motion imparting member is arranged in the region of the inlet of the separation chamber and is operative to cause the fluid medium to move within the separation chamber along a helical path towards the outlet of the chamber so that solid particles suspended in the fluid medium are moved along and against the peripheral wall and are thereby forced through the discharge openings in the wall while the fluid medium is discharged via the outlet of the chamber.

3,591,012

RACK, PARTICULARLY FOR HOLDING AND TYING NEWSPAPERS

Maurice J. Grady, 1829 Sycamore, Royal Oak, Mich.

Filed Mar. 16, 1970, Ser. No. 19,877
Int. Cl. A47f *7/00*
U.S. Cl. 211—50 **17 Claims**



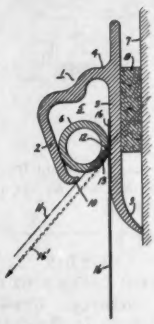
A rectangular open-topped rack for supporting stacked flat material such as newspapers so they are accessible and can be tied into a bundle while still in the rack comprises four

upright panels each consisting of a horizontal base strip and two bent wires shaped to modified inverted V upstanding from the base strip and having vertical legs at each end hinged to an adjacent panel. Each corner of the rack supports an elevated platform section which bridges and braces the wires of adjacent V's. The other legs of the V's of each panel incline downwardly toward one another and cross each other above the base strip but are spaced apart both above and below the platform level and the platform sections are also spaced apart. The base strips are also hinged together at the corners of the rack, permitting the entire structure to be folded flat when the platform sections are removed.

3,591,013
HANGER FOR FLEXIBLE SHEET MATERIAL

Pieter Von Herrmann, Schenectady, N.Y., assignor to Mohawk Precision Corporation

Filed Jan. 3, 1967, Ser. No. 606,630
Int. Cl. A47f *1/08*
U.S. Cl. 211—50 **4 Claims**

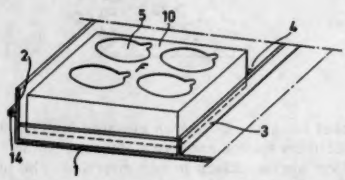


A hanger for temporarily holding sheet material by wedging action of rollers between convergent walls, including a special lip on the end of the front wall to prevent improper insertion and to assist release of improperly inserted sheets.

3,591,014
DEVICE FOR STORING AND DISTRIBUTING, FOR EXAMPLE MEDICINE CUPS

Sture Lindgren, Karlaplan 6, and Ove Gustav Littorin, Gavlegatan 27, both of Stockholm, Sweden

Filed July 1, 1968, Ser. No. 741,371
Claims priority, application Sweden, June 30, 1967, 10141/67
Int. Cl. B65d *1/34*
U.S. Cl. 211—72 **1 Claim**

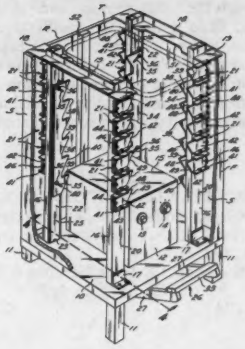


Medicine distribution apparatus including a tray divided into a number of sections or compartments and having a stand of cardboard or the like fitting in each compartment with each stand provided with holes, for example four, for the insertion of disposable medicine cups, the stand in some cases being arranged so that the portion thereof removed to form a hole for a medicine cup is utilizable as a cover for the medicine cup on which cover markings indicating instructions for the medicine may be placed. The medicine cups are provided with an edge by which they are supported in the holes in the stands.

3,591,015
ELEVATOR RACK

Blasie d'Anka, Cleveland, Ohio, assignor to Crescent Metal Products, Inc., Cleveland, Ohio

Filed May 28, 1969, Ser. No. 828,666
Int. Cl. A47f *3/14*; B65g *25/08*, *47/82*
U.S. Cl. 211—126 **7 Claims**

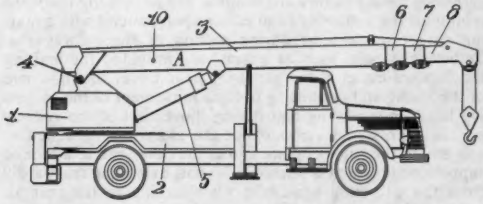


A rack for horizontally supporting a plurality of trays, baskets, or pans vertically spaced apart from each other and in vertical alignment. The rack includes a foot-operated elevator for simultaneously lifting all the trays supported by the rack form one level to the next higher level. The rack is adapted to receive and to be loaded with trays at a lower level and to deliver trays at an uppermost level.

3,591,016
BOOM EXTENSION MEANS HAVING MORE THAN THREE BOOM EXTENSION MEMBERS FOR USE WITH A TRUCK CRANE

Masatoshi Hanada, Takamathu, Japan, assignor to Kabushiki Kaisha Tadano Tekkosho, Takamatsu, Japan

Filed July 19, 1967, Ser. No. 654,484
Int. Cl. B60p *1/46*, *1/54*
U.S. Cl. 212—55 **1 Claim**



A boom construction comprises a tubular base member which is adapted to be mounted on a platform or a vehicle in a manner permitting it to be pivoted about a horizontal axis and to be swung about a vertical axis. Three separate additional boom members are telescoped within the base boom member and are movable relative to the base member and each other under the control of a plurality of fluid control cylinders which are mounted within the boom members. The first control cylinder is pivoted to the first inner one of the additional boom members preferably at the inner end thereof and it carries a piston having a piston rod which is pivoted at its inner end to the base boom member. A second fluid cylinder is pivoted to the second inner boom member and has a piston which is slidable therein with a piston rod which

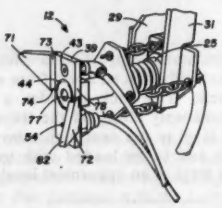
is pivoted at its inner end to a second boom member. Finally, a third inner boom member which is telescopic within the interior of all of the other boom member carries a third fluid cylinder having a third fluid piston slidable therein with a third connecting rod therefor which is connected at its inner end to the second innermost boom member. A feature of the construction is that the piston rods connected between the base member and the first boom member and the second boom member and the first boom member are provided with a double set of flow passages therethrough so that the fluid pressure which is directed into the first fluid cylinder on a pressure side thereof and which will cause expansion of the first boom member in respect to the base member will be directed through the other passage and into the pressure side of the second fluid cylinder to facilitate expansion of the second boom member in respect to the first boom member. The outermost fluid cylinder requires a piston rod with only one passage to complete the pressurization cycle for each of the fluid control cylinders and the expansion of all the boom members to an erected position simultaneously.

3,591,017

AUTOMATIC LINE CONNECTOR FOR RAILWAY CARS

Geoffrey W. Cope, Williamsville, and Swamidas K. Punwani, Lancaster, both of, N.Y., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 19, 1969, Ser. No. 859,431
Int. Cl. B61g *1/06, 5/06*
U.S. Cl. 213—76 **6 Claims**



An automatic line connector for railway cars useful in automatically connecting the airbrake lines of the cars upon mechanical coupling of the cars as well as electrical conductors and/or other air lines. The connector includes a gathering head adapted to universally mate with identical gathering heads of other railway cars. Positioned rearwardly of the gathering head is a first support plate which is attached to the railway car coupler. Means such as a spring act between the gathering head and the support plate for yieldably urging the gathering head to a forward position and permitting rearward motion of the gathering head either upon contact with a mating gathering head or during motion of the railway car. Tethering means, such as chains, are provided for limiting the forward travel of the gathering head under the influence of the spring and permitting oblique movement of the gathering head upon mating and during movement of the railway car. In a preferred embodiment the chains are attached at one end to the support plate and at the other end to a second support plate which is affixed to a shaft extending rearwardly from the gathering head, the shaft serving to transmit air between the railway cars.

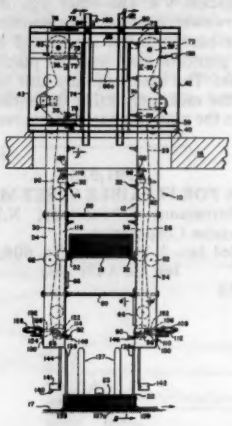
3,591,018

CARTON LOWERING MACHINE

John Chard Nalbach, New York, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 1, 1968, Ser. No. 741,654
Int. Cl. B65h *7/04, 29/50*
U.S. Cl. 214—6 **12 Claims**

A machine for handling and stacking sheetlike material including vertically opposed endless chain tracks, each having opposed cooperating tabs adapted to carry a number of sheets therebetween. A sheet transfer assembly is positioned adjacent the bottom end of the chain tracks to receive the sheets from the tab members and deposit them on a stack in a supply magazine from which sheets are periodically removed for a desired purpose. A control system responding to the height of the sheet stack within the magazine cycles



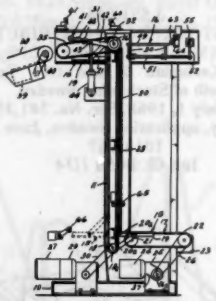
the transfer assembly and the chain tracks to supply sheets automatically to the magazine as required to maintain a predetermined supply therein.

3,591,019

STACKER FOR CASES AND THE LIKE

Robert L. Beninger, Sheboygan; Grant Hill, Jr., Elkhart Lake; Lawrence C. Oertle, Jr., Random Lake, and Paul W. Jacobsen, Kiel, all of, Wis., assignors to H. G. Weber and Company, Inc., Kiel, Wis.

Filed June 26, 1969, Ser. No. 836,869
Int. Cl. B65g *57/06*
U.S. Cl. 214—6 **3 Claims**



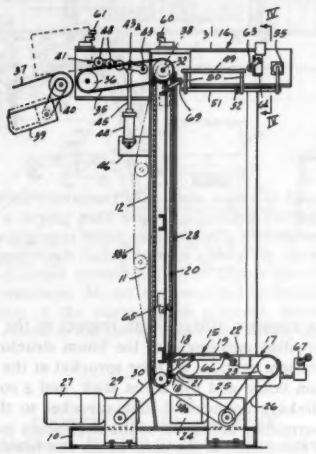
Stacker for cases having an elevated loading station and a lower delivery station and two platforms, connected to a pair of endless chains, driven in one direction. The platforms are spaced along the chains so that when one platform is at the delivery station the other platform is entering the loading station. The platforms each include two laterally spaced material carrying surfaces accommodating the platform to pass beneath the delivery station and deposit a column of cases thereon. The loading station includes an infeed conveyor, a stop gate limiting travel of a case along the infeed conveyor when another case is at the loading station, and slide rails supporting the case free from the platform as the platform has moved to its loading station, and movable to release the case onto the platform for lowering movement thereby.

3,591,020

STACKER FOR CASES AND THE LIKE

Robert L. Beninger, Sheboygan; Grant Hill, Jr., Elkhart Lake, and Lawrence C. Oertle, Jr., Random Lake, all of, Wis., assignors to H. G. Weber and Company, Inc., Kiel, Wis.

Filed June 26, 1969, Ser. No. 836,870
Int. Cl. B65g 57/06
U.S. Cl. 214—6 DK 5 Claims



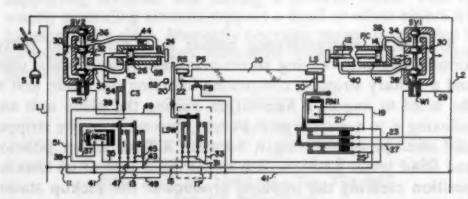
Stacker for boxlike articles, such as shipping cases, operating on the principle of successively depositing a first case onto a platform and stacking the other cases on the first case one on top of the other, as the platform moves downwardly, to provide a vertical column of cases, in which the lowermost case of the column is deposited on a delivery station and the entire column is delivered from the stacker. The platform is guided for vertical movement in a plurality of horizontal planes and is carried by an endless chain, driven by power to move the platform from its loading to delivery stations. The loading station includes slide rails extending along opposite sides of the platform and a fluid pressure-operated motor for moving the slide rails outwardly of the platform to deposit a case on the platform. The delivery station may be a delivery conveyor extending within the platform to accommodate the platform to deliver a stack of cases thereto. An infeed conveyor is provided to deliver cases to the loading station. A stop gate is operable to prevent the delivery of a case to the loading station, while one case is on the loading station.

3,591,021

AUTOMATIC LOADING APPARATUS FOR A CHARGE TABLE

Frank B. Hall, Chicago, Ill., assignor to Pettibone Mulliken Corporation, Chicago, Ill.

Filed July 3, 1969, Ser. No. 838,789
Int. Cl. B65g 61/00
U.S. Cl. 214—7 11 Claims



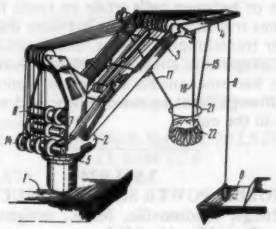
A charge table for storing billets until they are required at a grinding location. The billets are successively loaded on the table at a loading station, each billet being pushed forwardly on the table to a pickoff station where they are removed as required. Means are provided whereby billet accumulation takes place in the forward region of the table, thus insuring the presence of a billet at all times at the pickoff station.

3,591,022

CARGO CRANE

Anatoly Emelyanovich Polyakov, Ulitsa Gagarina 6, Kv. 58; Ivanovich Evgeny, Murmonsk, prospekt Lenina, 34, Kv. 3, and Alexei Petrovich Milyakov, Ulitsa Kholobystova, 31, kv. 72, all of Murmansk, U.S.S.R.

Filed Apr. 23, 1969, Ser. No. 818,631
Claims priority, application U.S.S.R., June 24, 1968, June 24, 1968, 1252801;1252802
Int. Cl. B65g 67/58
U.S. Cl. 214—13 7 Claims



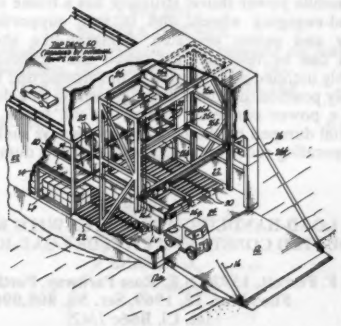
A cargo crane for transporting cargo from one object to another object under conditions of the mutual vibration of objects, particularly ships operating under rough sea conditions, in which cargo ropes, a horizontally mounted jib and a suspension define an imaginary isosceles truncated pyramid, with the ropes being so connected to the system following up the mutual vibration of objects as to provide equal tension of the ropes, thereby ensuring nonimpact and a precise placing of the cargo.

3,591,023

MECHANICALLY PROGRAMMABLE MARINE TRANSPORT CARGO HANDLING AND STOWAGE SYSTEM

Rudolph Allen, 4561 Lake Washington Blvd., Kirkland Wash.

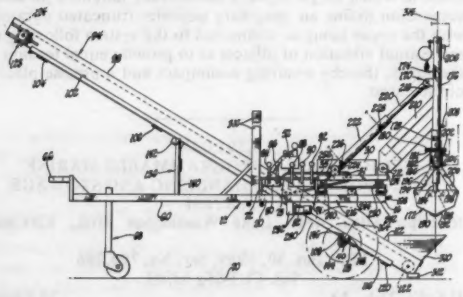
Filed Jan. 30, 1969, Ser. No. 795,266
Int. Cl. B65g 63/04
U.S. Cl. 214—14 29 Claims



The disclosed system is applicable to towed or powered cargo vessels. Central to one of its three distinct cargo handling phases, the system features an open staging deck on the vessel to and from which cargo is moved by way of a ramp

that can be lowered directly to the beach. Practical vessel design and ramp length permitting the vessel to remain afloat during such cargo transfers are achievable with special beach grades, variable ballasting of the vessel and adjustable slope of its loading ramp. Sidewise cargo transfer at a dock is also permitted, as are transship transfer operations by the same vessel. Central to a second of the three cargo-handling phases is an overarching three-directional crane-moving individual cargo units successively between the staging deck and elongated cargo stowage cells. The cells are arranged in tiers and extend longitudinally of the vessel with entrance ends preferably in a common vertical crane transfer plane adjacent to the staging deck. The cargo cells have individual conveyors, which function in the third of the three cargo-handling phases to move the inserted cargo units between successive stowed positions along the cells and crane transfer position at the cell entrances. With the total sequence of handling operations thus divided into these three phases and programmed large numbers of cargo units may be loaded and unloaded in a short time. Moreover rearranging of cargo units within or between cells while en route for convenience in subsequent transfer operations between the vessel and the shore or for transshipping is also readily achieved. Also disclosed are cargo unit shuttle conveyors featuring line-controlled cam bar mechanisms driven and controlled from the cell ends through lines to raise, lower and move individual cargo units in the cell.

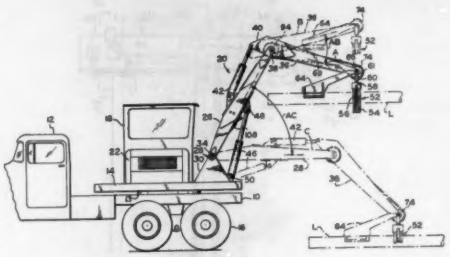
3,591,024
MOBILE POWER SHOVEL STRUCTURE
Glen V. Runge, Hudsonville, Mich., assignor to Kent Engineering, Grand Rapids, Mich.
Filed Apr. 7, 1969, Ser. No. 813,913
Int. Cl. E02f 7/00
U.S. Cl. 214—91 **8 Claims**



A mobile power shovel structure has a frame supported on ground-engaging wheels and in turn supporting a prime mover and power operated clamshell-like shovel bucket which can be telescopingly raised and lowered as well as variably inclined with respect to the ground and even translationally positioned from a digging position to a dumping position; a power conveyor carried by the frame accepts the material dumped by the bucket and conveys such material to a cooperating receiving receptacle such as a dump truck.

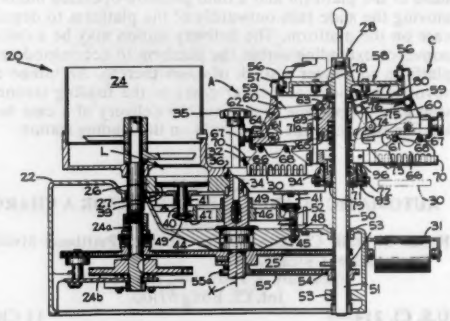
3,591,025
LOAD-HANDLING APPARATUS WITH BOOM-MOUNTED CONSTANT ATTITUDE LOAD-HANDLING MEANS
Lynn F. Perrott, 15928 N.E. Rose Parkway, Portland, Oreg.
Filed Mar. 18, 1969, Ser. No. 808,090
Int. Cl. B66c 1/42
U.S. Cl. 214—147 **18 Claims**

A mobile loader of the type having an articulated boom structure pivoted to a mobile base and with a log grapple mechanism pivoted to the free end of the boom structure. The boom structure includes an inner main boom pivoted to the base for movement in a vertical plane and an outer boom stick pivoted to the outer end of the main boom for movement in the same vertical plane. A heel boom is pivoted to the outer end of the boom stick and includes a special mounting hub incorporating a sprocket which pivots with the heel boom about its pivot axis. The sprocket forms part of a mechanical linkage differential system which extends within the boom structure to the base and which maintains the heel



boom in a constant attitude with respect to the base during vertical pivoting movement of the boom structure. This differential system includes an idler sprocket at the intersection of the main boom and the boom stick, and a rod, lever and cylinder linkage connecting such sprocket to the base in a manner permitting actuation of the heel boom independently of pivotal movement of the main boom and boom stick.

3,591,026
FOOD MOLDING PROCESS
Eugene F. Felstehausen, Hoopeston, Ill.
Continuation-in-part of application Ser. No. 602,062, Dec. 15, 1966, now Patent No. 3,460,191. This application May 7, 1969, Ser. No. 822,628
Int. Cl. B65g 31/04
U.S. Cl. 214—152 **1 Claim**



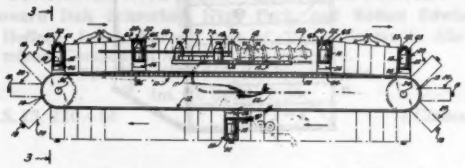
A method of transferring patties in a hamburger patty-forming machine having turret-mounted pickup blade units and a unitary stripper, comprising lowering the blade unit at the mold to impale a hamburger, raising the blade unit and indexing it to a discharge conveyor, camming up the stripper unit and spring lowering it between a fixed upper position and fixed lower position with the stripper unit at its lowered position clearing the impaled product at the pickup station but applying a downward acceleration to the impaled product at the discharge conveyor that exceeds the acceleration of gravity and cleanly separates the product from the stripper unit.

3,591,027

HIGH-SPEED CONTAINER-DRAINING APPARATUS

Jerry L. East, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.

Filed Apr. 10, 1969, Ser. No. 814,946
Int. Cl. B65b 69/00
U.S. Cl. 214—311 27 Claims



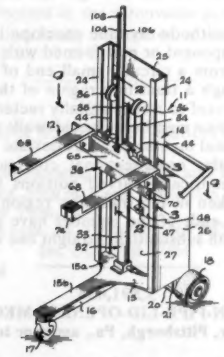
Open-ended containers with rinse water in them are carried along a drying path which includes a curved path segment, the containers being carried along that curved segment with their open ends facing radially outwardly. As a result, an outwardly directed centrifugal force expels the rinse water from the containers. Means are provided to increase the effective radius of the curved path segment, thereby to increase the effective net centrifugal force acting on the rinse water.

3,591,028

LIFT TRUCK AND ADAPTER

Murry G. McClung, Jr., 200 South Camden Drive, Beverly Hills, Calif.

Filed Sept. 8, 1969, Ser. No. 855,815
Int. Cl. B66f 9/14
U.S. Cl. 214—313 5 Claims



The application discloses a lift truck embodying a vertically movable load-supporting member actuated by a fluid ram connected thereto through the medium of sheaves and cables, together with adapter equipment carried by the load-supporting member and having a pivoted frame with forwardly extending arms to support a bowl or other object with handles at the sides. Manually operable means is provided for pivoting the frame and releasably locking it in a selected position.

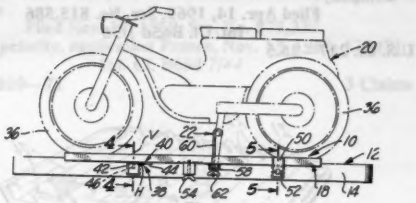
3,591,029

CYCLE CARRIER FOR AN AUTOMOTIVE VEHICLE

Boyde A. Coffey, 1712 Vallecito Drive, La Puente, Calif.

Filed Aug. 28, 1968, Ser. No. 756,067
Int. Cl. B60r 9/10
U.S. Cl. 214—450 4 Claims

A cycle carrier for an automotive vehicle is provided. The carrier has a cycle-supporting platform which is attached to the vehicle for movement between an elevated travel position, wherein the platform is disposed to support the wheeled cycle for transportation by the vehicle, and a lower cycle-loading and unloading position, wherein the platform is disposed to permit rolling movement of the cycle to and from the platform.

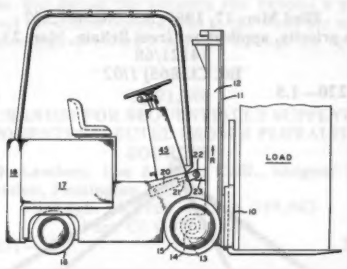


3,591,030

OVERLOAD-DETECTING MECHANISM FOR A LIFT TRUCK

John J. Pachter, Harvey, Ill., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Dec. 10, 1968, Ser. No. 782,529
Int. Cl. B66f 9/20
U.S. Cl. 214—673 7 Claims



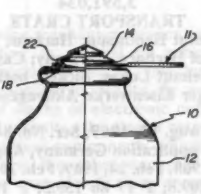
In a load-handling truck the load is accepted by a ram that is mounted on a support of the truck frame adapted to deflect slightly under the stress of the load against the ram. This deflection of the support is amplified through a multiplying lever mechanism using as fulcrums a part of the support and a fixed part of the truck so spaced from the support that it is not affected by the load. The multiplied movement is used to actuate a control or signals.

3,591,031

BOTTLE OPENER

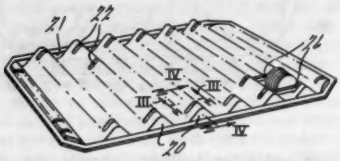
Henry Komendowski, Evanston, Ill., assignor to Automatic Liquid Packaging, Inc., Elk Grove Village, Ill.

Filed Aug. 7, 1969, Ser. No. 848,245
Int. Cl. B65d 1/00, 17/18
U.S. Cl. 215—46 6 Claims



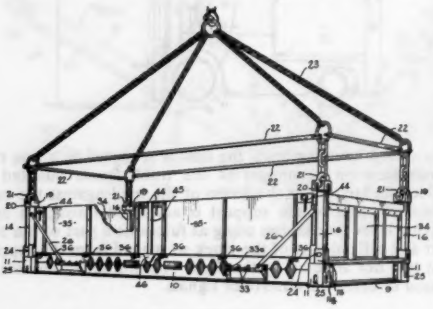
A throwaway bottle for use with plastic bottles having a cap or end closure integrally molded thereon, to open these bottles by removing the caps or end closures.

3,591,032
RECEPTACLE-PALLET
Jack E. Baxter, Cincinnati, Ohio, assignor to The Baxter Company
Filed Apr. 14, 1969, Ser. No. 815,586
Int. Cl. B65d 1/36
U.S. Cl. 217—26.5 2 Claims



A rigid traylike sheet is contoured to provide a plurality of work-holding channels defined by wavular walls of sawtooth section extending both above and below end walls which form a part of the perimeter.

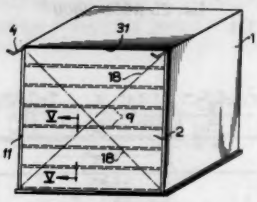
3,591,033
LIFTING PLATFORMS FOR SUPPORTING LOADS
Philip Partridge, Askham, near Retford, Nottingham, England, assignor to W.H.D. Developements Limited, Langwith Junction near Mansfield, Nottingham County, England
Filed Mar. 17, 1969, Ser. No. 807,527
Claims priority, application Great Britain, Mar. 23, 1968, 14121/68
Int. Cl. B65j 1/02
U.S. Cl. 220—1.5 3 Claims



Load-supporting platform provided with foldable corner posts, connected both when folded and upstanding, at the same relative positions, to the spreader bars of a platform-lifting crane sling.

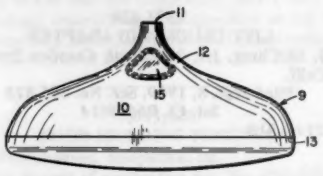
3,591,034
TRANSPORT CRATE
Alfred Lohr; Helmut Hemmann; Hartmut Bussewitz; Gunter Leonhardt, all of Herborn, Germany; Carl H. Schroter, Dillenburg, and Helmut Lukas, Bicken, both of, Germany, assignors to Burger Eisenwerke Aktiengesellschaft, Herborn, Germany
Filed Aug. 12, 1969, Ser. No. 849,417
Claims priority, application Germany, Aug. 31, 1968, Aug. 24, 1968, Feb. 24, 1969, Feb. 20, 1969
P 17 86 209.8; P 17 86 159.5; P 19 09 124.8; G 69 06 597.0
Int. Cl. B65d 87/00
U.S. Cl. 220—1.5 16 Claims

A crate for the transportation of goods has a prismatic shell with a side opening closable by a pliable door which can be rolled or folded about an edge of that opening and which includes a series of transversely spaced, parallel stays interconnected by a flexible sheet. The ends of the stays and/or



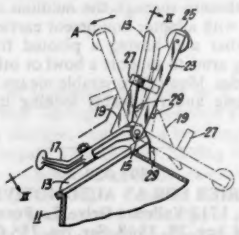
the edges of the sheet can be engaged by a variety of detents, disposed along opposite sides of the opening, to hold the door locked.

3,591,035
RECTANGULAR CATHODE-RAY-TUBE ENVELOPES
Albert M. Gossie, Painted Post, and Lawrence B. Hausheer, Corning; both of, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Sept. 12, 1969, Ser. No. 857,485
Int. Cl. H01j 61/30; H01k 1/28
U.S. Cl. 220—2.1 A 10 Claims



A rectangular cathode-ray-tube envelope including a funnel member, component or part formed with sidewalls which flare outwardly from a circular small end of the member or component through a transition region of the member near the small end thereof to a substantially rectangular large end of the component or member. The sidewalls in the transition region of the funnel member or part deviate somewhat from their usual circular cross-sectional configuration and are formed with cylindrically curved portions thereon so that cross sections taken in the transition region in planes lying parallel with the ends of the member have generally oblate configurations with substantially straight line opposed sides.

3,591,036
ASCENSION-PIPE-LID-OPENING MECHANISM
Gilbert C. Nestler, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed Sept. 30, 1969, Ser. No. 862,221
Int. Cl. B65d 43/16, 51/10
U.S. Cl. 220—36 3 Claims



The lid of an ascension pipe elbow is provided with a hinge lug and a counterweighted arm. The arm engages the lug and

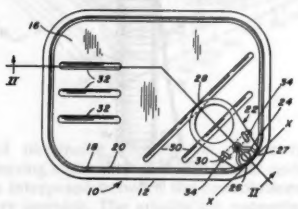
first breaks the tar seal around the cover and then pivots the cover to its full-open position. When the cover is closed, the counterweighted arm also tends to keep the cover in the closed position.

3,591,037

CONTAINER WITH REMOVABLE PANEL PORTION

Howard Dale Schrecker, Hyde Park, and Robert Edwin Heffner, Lower Burrell, both of, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 24, 1969, Ser. No. 801,656
Int. Cl. B65d 17/24
U.S. Cl. 220—54 7 Claims



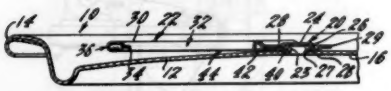
A container having a removable panel portion in one of its walls defined by a score line around the periphery of such portion and having a pull tab attached to the removable portion at its starting end and a plurality of parallel ribs downwardly embossed in the removable portion adjacent its starting end substantially parallel to a line tangent to the score line at such starting end, and additional parallel ribs downwardly embossed in the removable portion adjacent its terminal end substantially normal to a line tangent to the score line at such terminal end.

3,591,038

EASY-OPEN END WITH ABUSE-RESISTANT OPENING TAB

Alexander Walker Mooring, Norwalk, and Harley Earl Simmons, Stamford, both of, Conn., assignors to American Can Company, New York, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,396
Int. Cl. B65d 17/24
U.S. Cl. 220—54 3 Claims



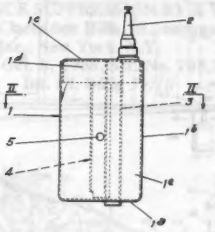
A scored can end closure is provided with an opening tab which is secured adjacent the score to a panel of the closure by a rivet and is held against vibration during shipment to prevent inadvertent rupture of the score. The opening tab is formed with downwardly curled edges, at least one portion of which is opened up, or made greater in diameter than the adjacent portions, so that it extends downwardly and contacts the end at an area spaced from the rivet, even when the panel is bulged outwardly by internal pressure, and thus dampens the tab against vibration during long distance shipment in freight cars and trucks.

3,591,039

FUEL CONTAINER FOR GAS LIGHTER

Robert R. Hocq, Boulogne-Billancourt, France, assignor to Societe Franco-Hispano-Americaine Francispam, Paris, France

Filed Nov. 10, 1969, Ser. No. 875,337
Claims priority, application France, Nov. 13, 1968, 173471
Int. Cl. B65d 7/44
U.S. Cl. 220—71 3 Claims



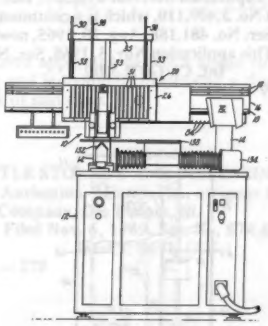
A fuel container for a gas lighter which is designed to avoid damage to a lighter in which it is installed should the pressure inside it rise to a dangerous level. The fuel container has a reinforcement inside it which is of H, I, U, or Z section with the flats of the reinforcement soldered to opposite inside walls of the container. The walls are also provided with openings in them which are sealed by the flats during normal conditions, but should the pressure rise beyond a predetermined level the solder connections to the walls are separated and the excess gas pressure is relieved through the openings.

3,591,040

MECHANISM FOR SEQUENTIALLY SUPPLYING COMPONENTS SELECTED FROM A PLURALITY OF SOURCES

Arthur H. Lambert, Los Angeles, Calif., assignor to USM Corporation, Flemington, N.J.

Filed Feb. 14, 1969, Ser. No. 799,463
Int. Cl. G07f 11/00
U.S. Cl. 221—10 3 Claims



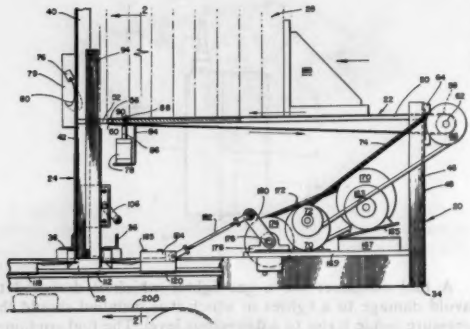
A linear positioning mechanism sequentially shifts an array of articles according to manual or automatic control to release them individually and in selected succession for delivery to a single discharge locality. By way of example, an aligned plurality of stacks of electronic components such as discrete integrated circuits (the stacks respectively comprising electrically identical components which may differ electrically from those in the other stacks of the plurality) is moved according to control data along an axis successively to register selected stacks with a gravity-feed chute. The latter may be part of a component-mounting machine, or be a magazine loadable according to a desired program, to facilitate subsequent sequentially mounting of the components.

3,591,041

DENESTING MACHINE

Santo DiGrande, Medford, Mass., assignor to True Plastic Corporation, Boston, Mass.

Filed Jan. 31, 1969, Ser. No. 795,508
Int. Cl. G07f 11/12; B65g 59/00; B65h 3/00
U.S. Cl. 221—11 8 Claims



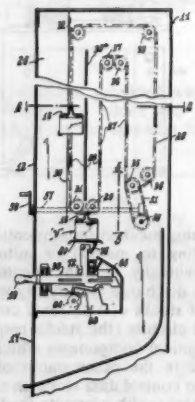
A machine for denesting and dispensing individual containers comprising a magazine for holding a stack of containers, conveying means for delivering additional stacks of containers to the magazine, and a release mechanism mounted for reciprocal movement transversely to the bottom end of the magazine for selectively denesting and discharging individual containers from the magazine. The reciprocal release mechanism comprises oppositely mounted members which are alternately inserted between the two lowermost containers in the magazine so as to release only the lowermost container while holding the balance of the stack within the magazine.

3,591,042

ARTICLE-VENDING MACHINE

Harold D. Baum, 6610 North Clark St., Skokie, Ill.

Continuation of application Ser. No. 693,587, Dec. 26, 1967, now Patent No. 3,409,110, which is a continuation of application Ser. No. 481,188, Aug. 20, 1965, now Patent No. 3,360,091. This application Nov. 5, 1968, Ser. No. 773,532
Int. Cl. G07f 5/00
U.S. Cl. 221—19 32 Claims



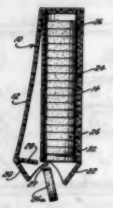
Merchandise-vending apparatus of a kind having a plurality of merchandise carriers, each having merchandise containers thereon adjustable in size and wherein the carriers are selectively movable into positions to vend merchandise therefrom. The apparatus includes vending or ejector mechanism individually adjustable for positioning to orient the mechanism with the merchandise containers.

3,591,043

ARTICLE CONTAINER AND DISPENSER

Kelly Murphy, 55 West 14th St., New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,711
Int. Cl. B65d 83/04
U.S. Cl. 221—64 15 Claims



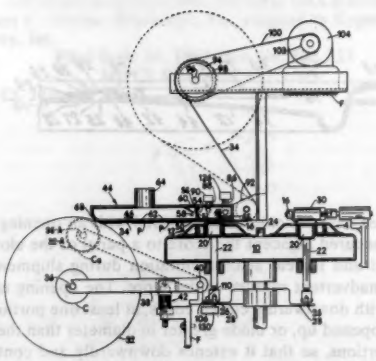
A plurality of articles are stacked within a resiliently deformable, normally closed housing and held in position by a first stop member located beneath the lowermost of the stacked articles. The application of an external force to the housing produces an opening at one end of the housing and causes the first stop member to move away from the lowermost of the stacked articles while a second stop member is positioned intermediate the lowermost article and the articles stacked thereabove thereby to permit the lowermost one of the stacked articles to be released through that opening while the remainder of the stack is held in place.

3,591,044

PATCH-FEEDING DEVICE FOR CIGAR-MAKING MACHINE

Harry Allison Hooper, Larchmont, N.Y.; Frank Hollenton, Richmond, Va., and Warren Arthur Brackmann, Ontario, Canada, assignors to AMF Incorporated

Filed Jan. 10, 1969, Ser. No. 790,302
Int. Cl. B65h 5/28
U.S. Cl. 221—73 11 Claims



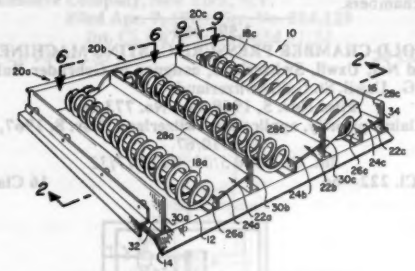
Apparatus for feeding stretched oriented tobacco leaf patches from a roll into the die turret of a cigar machine.

3,591,045

HELICAL COIL VENDING MACHINE

John C. Sturrock, Lomira, Wis., assignor to Raymond F. Jones, Hillsborough, Calif.

Filed Nov. 24, 1969, Ser. No. 879,319
Int. Cl. G07f *11/00*
U.S. Cl. 221—75 10 Claims



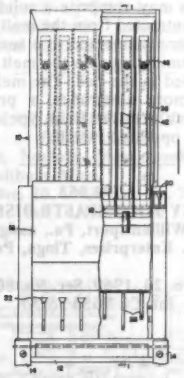
Improved dispensing shelves for cabinet-type vending machines having a plurality of helical feeder coils for advancing articles interposed between the convolutions of the coils to a delivery opening. The articles are supported on sloping supports having a lower front edge terminating in a downward step immediately adjacent one side of a cooperating coil. Guide rails disposed from and adjacent the opposite side of cooperating coils maintain various sized article in engagement with the coils. Single coil driver mechanisms rotate individual coils on selective activation and additional double coil drive mechanism for discrete pairs of coils connected in tandem operate the paired coils in an alternating manner form a single activating signal.

3,591,046

CONVERSION ACCESSORY FOR VENDING MACHINES

Earl James Corbin, 2214 Holliday, Wichita Falls, Tex.

Filed May 23, 1969, Ser. No. 827,405
Int. Cl. A47f *1/04*; G07f *11/00*
U.S. Cl. 221—155 2 Claims



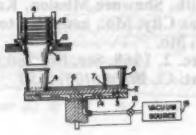
A vending machine conversion device to enable elongated articles of merchandise to be dispensed from vending machines which normally dispense short blocky-type articles of merchandise. The conversion device consists of an elongated transparent tube, which may be plastic, secured to the vending machine so that each tube may occupy a chute, from which merchandise has been previously vended, which tube is held a spaced distance above the merchandise support member, so that merchandise may be ejected at an angle by an ejector that is of lesser height than the length of the merchandise. The transparent tube is supported a spaced distance below the top of the vending machine to enable ready insertion of merchandise into the tubes form which it is vended. The tubes are readily removable and replaceable when desired or may be removed from the machine to enable the machine to be used as originally designed, in a minimum of time.

3,591,047

CUP BOUNCE SUPPRESSION BY A VACUUM

Russell C. Buhle, Clarendon Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 8, 1968, Ser. No. 765,779
Int. Cl. B65g *59/10*
U.S. Cl. 221—211 2 Claims



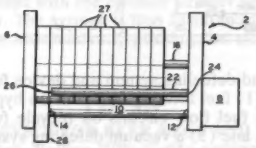
A cup feed system which uses vacuum means to suppress cup bounce when a cup is fed from above onto a cup feed station.

3,591,048

COVER DISPENSER

Michael R. Myers, Kansas City, Mo., assignor to Phillips Petroleum Company

Filed Sept. 10, 1969, Ser. No. 856,743
Int. Cl. B65g *59/00*
U.S. Cl. 221—277 6 Claims



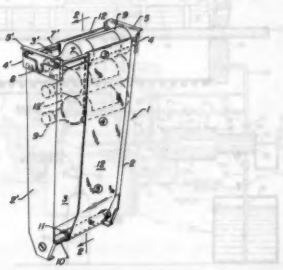
An improved apparatus having a single rotating roller for maintaining and individually dispensing a disc-shaped article from a stack of said discs.

3,591,049

BOTTLE STORAGE AND DISPENSING UNIT

Nicholas A. Auriemma, Miami, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 6, 1969, Ser. No. 874,605
Int. Cl. B65h *1/08*
U.S. Cl. 221—279 8 Claims



A bottle storage and dispensing unit utilizing a frame adapted to be suspended from below a cart or counter work

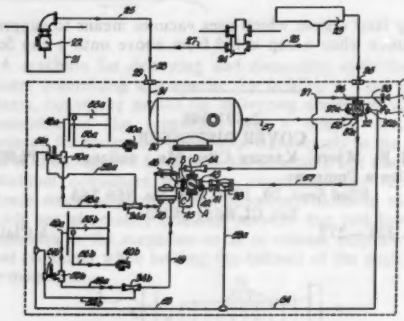
surface. The frame in turn holds a looped belt which is supported over spaced upper roller surfaces and attaches at one end to a lower positioned spring loaded roller so as to provide a means for holding and counterbalancing the weight of a plurality of bottles stacked horizontally therein. A preferred construction provides that the upper roller supports for the belt will be spring biased in a lateral direction to hold the top bottle, as well as the stack, from being lifted up and out of the frame; however, the supports are such that they can be spread apart laterally by a lifter means to permit the bottles to be removed one at a time. Also, a preferred lifter means construction has a dual function in being designed to be lockable to prevent bottle removal as well as being usable to assist in lifting an uppermost bottle.

3,591,050

TURBOJET AIRCRAFT FUELING AND DEFUELING DEVICE

Vincent J. Kupersmith, Shawnee Mission, Kans., and Homer C. Hartung, Kansas City, Mo., assignors to Autotank Company, Kansas City, Mo.

Filed Dec. 2, 1968, Ser. No. 780,444
Int. Cl. B67d *5/08, 5/58*
U.S. Cl. 222—23 **6 Claims**



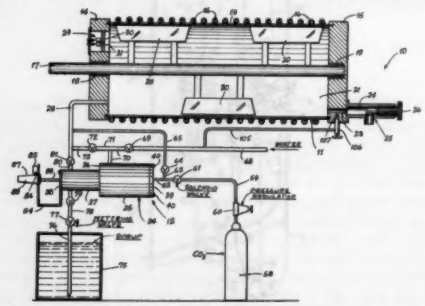
A fueling and defueling system and device for turbojet aircraft having; (1) fuel filtering functions on bypass operation, (2) combined fuel flow circuits on recycle fuel flow retest and defueling, and (3) a vacuum defueling system created by recycle flow from the fuel source.

3,591,051

CONTROL TO PROPORTION INGREDIENTS SUPPLIED TO DRINK DISPENSERS

Orville Mitchell; John D. Harris, and Dudley C. Smith, all of Dallas, Tex., assignors to John E. Mitchell Company, Dallas, Tex.

Filed Mar. 17, 1969, Ser. No. 807,494
Int. Cl. B67d *5/30*
U.S. Cl. 222—56 **9 Claims**



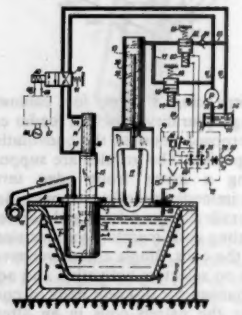
A control for proportioning ingredients supplied to a drink dispenser. A housing having separate water, syrup and carbon dioxide chambers. A slide reciprocative within the housing and having walls defining a wall of each chamber. Reciprocations of the slide alternately expand and contract the volumes of the chambers while maintaining desired relative proportions of the water, syrup and carbon dioxide. Valves operate in response to reciprocation of the slide to control the introduction of ingredients to and the discharge from their respective chambers, the slide being reciprocative in response to alternate introduction of ingredients to respective chambers.

3,591,052

COLD CHAMBER PRESSURE CASTING MACHINE

Alfred Nef, Uzwil, Switzerland, assignor to Gebruder Buhler A. G., Uzwil, St. Gall, Switzerland

Filed Nov. 5, 1968, Ser. No. 773,464
Claims priority, application Switzerland, Nov. 8, 1967, 15610/67
Int. Cl. B67d *5/08;* **B22d** *17/32*
U.S. Cl. 222—64 **16 Claims**



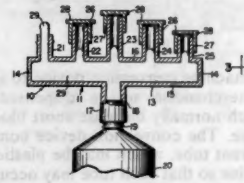
A cold chamber pressure casting machine includes a mold charge injector, a melting or heat retaining crucible and a piston pump extending into the crucible and connected to the injector, the piston pump having a pump chamber communicating with a feed opening which is beneath the level of melt in the crucible. A displacement means is operatively associated with the melt in the crucible to control the level thereof, and a control means controls operation of the displacement means. A melt level feeler is positioned in the crucible in the range of the melt surrounding the piston pump, and influences operation of the control means. The displacement means may comprise a solid body which may be inserted into or retracted from the melt, or may comprise an inverted bell means connected to a source of fluid under pressure and communicating with the melt in the crucible. A float may be provided in the bell. The melt level feeler may comprise one or more electrodes, a pressure responsive means connected to a pressure fluid type operator of a control valve, or a float operated switch.

3,591,053

SANITARY TOOTHPASTE DISPENSER

Orrin H. Thomas, Williamsport, Pa., assignor to Richard L. Hughes and J. C. Enterprises, Tioga, Pa., part interest to each

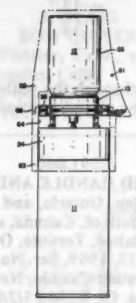
Filed Feb. 24, 1969, Ser. No. 801,607
Int. Cl. B65d *35/38*
U.S. Cl. 222—92 **1 Claim**



A sanitary dispenser for tubes of toothpaste wherein there is provided a member for attachment to the neck of a

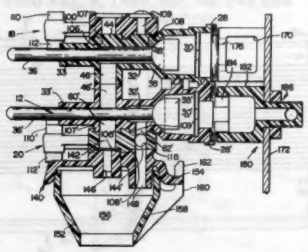
toothpaste tube, there being a plurality of nozzles or tube members extending therefrom whereby toothpaste can be dispensed selectively from any of the tubular members onto a toothbrush or the like.

3,591,054
DISPENSING PACKAGE AND CONNECTING DEVICE
Gilbert De Wayne Miles, Ossining, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,129
Int. Cl. B67d *5/64; B65d 81/32*
U.S. Cl. 222—135 **20 Claims**



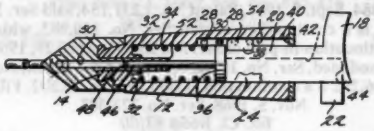
Two aerosol-type containers are interconnected in operative assembly for simultaneously dispensing and mixing their contents by a connecting device comprising first and second members releasably connected to the respective containers. These two members are connected for limited relative rotation and for selective relative axial movement, and they have cooperating structure which in a first nondispensing position of relative rotation prevents said relative axial movement and in a second dispensing position of relative rotation permits said axial movement. A discharge spout unit on one of said members operatively connected to both members is adapted to dispense the mixed contents of both containers, whereby the contents are simultaneously discharged from both containers, mixed and dispensed from the spout unit when said cooperating structure is associated in said second dispensing position and the members and their respective containers have been moved toward each other. The containers may for example contain respectively fluid shave cream and a material adapted for exothermic interaction therewith for dispensing self-heated warm lather from the discharge spout.

3,591,055
MIXING VALVE ASSEMBLY FOR BEVERAGE DISPENSERS
Robert L. Norton, Norfolk, Mass., assignor to Jet Spray Cooler, Inc., Waltham, Mass.
Filed Dec. 20, 1968, Ser. No. 785,722
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 **13 Claims**



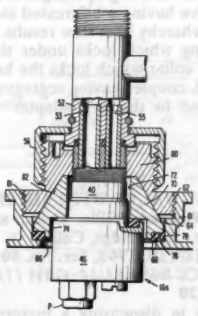
A mixing valve assembly for beverage dispensers including a pair of identical molded valve housings aligned parallel and one above the other and with one inverted with respect to the other. Means are provided on the housings to attach the two parts together, and a pair of identical valve actuator supports are connected to the housings, one above the upper housing and one below the lower housing. Identical mounting lugs are connected to the rear portions of the joined housings to support the assembly on a bracket.

3,591,056
PIPETTING SYRINGE OF PRECISELY VARIABLE DISPLACEMENT VOLUME
Richard J. Griffin, Denver, Colo., assignor to Whale Inc., Nashville, Tenn.
Filed June 12, 1969, Ser. No. 832,805
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 **11 Claims**



A pipetting syringe of precisely variable displacement volume which includes a dispenser body having a plurality of holes for receiving and holding a removable stop pin in a selected one of the holes and wherein a fill plunger having a projection thereon for engagement with the stop pin is located within the body. An ejection plunger is slidably located within the body and within a longitudinal groove of the fill plunger for ejecting material from the syringe. The stop pin is placed in the desired hole which corresponds to the desired volume to be received and ejected by the syringe and the fill plunger is then pushed forwardly as far as possible and released so that a fill spring mounted within the body and in engagement with the ejection plunger forces the plungers rearwardly. The syringe is thus filled and the material is then ejected by independently pushing the ejection plunger forward.

3,591,057
TAPPING DEVICE FOR BEER KEGS AND THE LIKE
Mack S. Johnston, Rolling Hills, Calif., assignor to Republic Corporation, Beverly Hills, Calif.
Continuation of application Ser. No. 737,982, June 18, 1968, which is continuation-in-part of application Ser. No. 607,297, Jan. 4, 1967, and a continuation-in-part of 587,627, Oct. 18, 1966, which is a continuation of application Ser. No. 406,682, Oct. 27, 1964, now abandoned. This application Mar. 27, 1970, Ser. No. 23,454
Int. Cl. B65d *83/14*
U.S. Cl. 222—400.7 **19 Claims**



The present device comprises a keg tapping unit which is connected about a "Peerless" type keg opening by insertion

through the side filling opening of the keg and in a large "Golden Gate" type keg opening by insertion through the tapping opening. An adapter is provided for connecting the key unit in the larger opening and includes a generally conical member engaged about the tapping unit and having a flange engageable against a shoulder within the keg opening. A coupling nut engages the tapping unit and is threaded about the internal threads in the larger opening to secure the tapping unit to the keg.

3,591,058

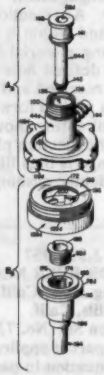
TAPPING DEVICE FOR BEER KEGS AND THE LIKE

Mack S. Johnston, Rolling Hills, Calif., assignor to Republic Corporation, Beverly Hills, Calif.

Division of Ser. No. 587,627, Oct. 18, 1966, which is a continuation of Ser. No. 406,682, Oct. 27, 1964, abandoned, which is a continuation-in part of Ser. No. 150,982, Nov. 8, 1961, abandoned, and a continuation-in-part of Ser. No. 395,084, Sept. 8, 1964, Patent No. 3,231,154, said Ser. No. 395,084 is a continuation of said Ser. No. 150,982, which is a continuation-in-part of Ser. No. 25,592, April 29, 1960, abandoned, Ser. No. 159,818, Dec. 8, 1961, Patent No. 3,156,252 is a continuation of said Ser. No. 25,592. Filed Nov. 5, 1968, Ser. No. 773,387

Int. Cl. B65d *83/00*

U.S. Cl. 222—400.7 7 Claims



The tapping device includes a keg adapter semipermanently secured within a keg opening and having liquid and gas passages. A valve having a bifurcated stem is disposed in the liquid passage whereby beer flow results. The keg adapter is secured by a ring which locks under the keg flange by cooperation with a collar which locks the keg adapter flange to the keg flange. A coupler having segregated liquid and gas passages is attached to the keg adapter when the keg is tapped.

3,591,059

METERING VALVE WITH AIR SHUTOFF

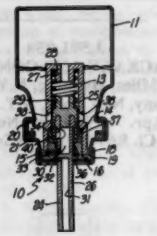
Carl L. Stearns, Granada Hills, Calif., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Mar. 10, 1969, Ser. No. 805,534

Int. Cl. B65d *83/14*; G01f *11/38*

U.S. Cl. 222—402.20 10 Claims

A valve for use in dispensing a metered amount of an aerosol spray. A valve with a body mounted on the container and a moving stem having a metering chamber and an outlet chamber. A spring urging the stem to a closed position blocking the metering chamber from the atmosphere, with the stem movable to a charge position for charging the metering chamber, with discharge of the metered amount from



the metering chamber through the outlet chamber occurring as the stem returns to the closed position.

3,591,060

COMBINED HANDLE AND SPOUT

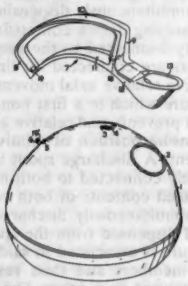
Mikio Nakamura, Weston, Ontario, and Lawrie G. McIntosh, Etobicoke, Ontario, both of, Canada, assignors to McGraw-Edison of Canada Limited, Toronto, Ontario, Canada

Filed Apr. 23, 1969, Ser. No. 818,603

Claims priority, application Canada, Nov. 29, 1968, 036,500

Int. Cl. B65d *25/28*

U.S. Cl. 222—475 10 Claims



The invention relates to a combined handle and spout for a liquid containing vessel and where such handle and spout are formed as a unitary member.

3,591,061

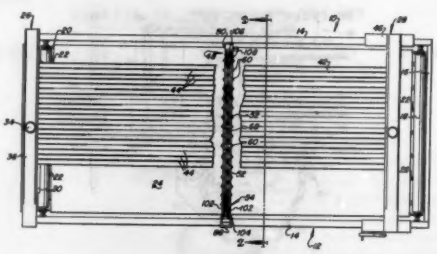
APPARATUS FOR SUPPORTING AND FOLDING PLEATED FABRIC

John T. Boyes, 1834 Maine St., Quincy, Ill.

Filed Nov. 10, 1969, Ser. No. 875,022

Int. Cl. A41h *43/00*; D06j *1/00*

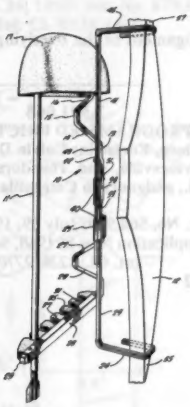
U.S. Cl. 223—32 5 Claims



Apparatus for supporting and unloading pleated drapery panels from a drapery pleating and finishing machine. An

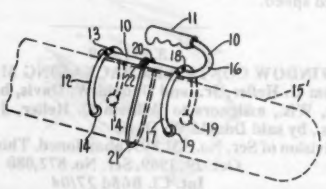
elongated frame operable to be removably positioned beneath a pleated drapery panel includes a series of interconnected isosceles links forming a "lazy tong" mechanism. Slender pins or rods, comprising the pivot axes of the interconnected links forming the lazy tong, extend into the folds of the drapery to support the same and keep the folds in the formed position. The lazy tong mechanism is operable to be contracted to bring the folds closely adjacent each other thereby facilitating handling of the drapery panel without distorting the folds while the panel is removed from the machine. The supporting apparatus is pivotally secured to a toggle action clamp which is operable to removably fasten the apparatus to the pleating machine.

3,591,062
BOW QUIVER
Richard S. Karbo, Whittier, Calif., assignor to The Leisure Group, Inc., Los Angeles, Calif.
Filed July 24, 1969, Ser. No. 844,497
Int. Cl. F41c *33/00*
U.S. Cl. 224—1-B **7 Claims**



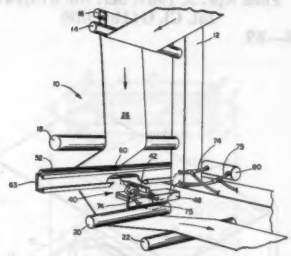
A bow quiver is described having an elongated frame having a quiver hood attached to the one end of the frame and an arrow clip attached to the other end thereof. Mounting means including a fixed arm and a slide arm are provided having clamps located at their ends for gripping the tapered portions of the bow. A spring biased latch mechanism is connected to the frame and is adapted to permit the slide arm to move in the direction to shorten the effective length between the clamps to enable the clamps to be wedged onto the tapered portion of the bow. The latch mechanism is further constructed to lock the slide arm with respect to the frame to maintain the clamps in the wedged position.

3,591,063
SURFBOARD CARRIER
Arthur R. Pearce, 8 Kupper Drive, Normandy Beach, N.J.
Filed Aug. 8, 1969, Ser. No. 848,604
Int. Cl. B65d *71/00*
U.S. Cl. 224—55 **1 Claim**



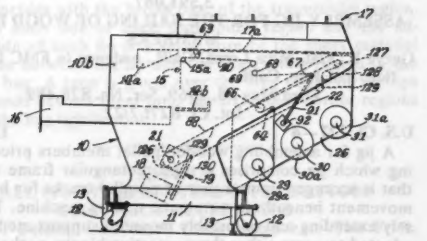
A surfboard carrier comprises a frame member having a hand grip on its upper portion. Attached at its middle, to the rear of the frame member, is a downwardly-directed, two ended gripping member having cushion pad gripping means at both its opposing ends, the pads serving to protect the surfboard, which is inserted between them. Another downwardly directed gripping member is attached, at its middle, to the forward portion of the frame member, and it also has its opposing free ends provided with cushion pad gripping means to protect the surfboard which is inserted between them. At least one strap has one end attached to the frame member near midpoint between the two gripping members. It is used to circumscribe and to hold tightly the surfboard, after which its other end is fastened to the frame member.

3,591,064
CONTINUOUS BAND DIRECTOR
William Kirk Wyatt, Lansdale, and John R. Brownell, Telford, both of, Pa., assignors to Turbo Machine Company, Lansdale, Pa.
Filed June 23, 1969, Ser. No. 835,418
Int. Cl. B65h *25/08*
U.S. Cl. 226—22 **3 Claims**



A control means for directing the traverse of a moving band of continuous material which passes over a plurality of tensioning bars and is subject to deviations in its transverse position due, in part, to its inherent properties in such an environment, comprises a bar contacting the face of the band of material and capable of being tilted with respect to the dominant moving plane of said face by means disposed of the end of said bar, and most preferably by means connected to said bar spaced from the axis thereof, to pivot said bar. The bar is moved by an amplifier-controller servosystem which is constantly error sensitive.

3,591,065
FILM FEED MECHANISM FOR A WRAPPING MACHINE
Omar Hansen, Jr., Yardley, Pa., and Donald K. Shannon, Poneto, Ind., assignors to J. B. Dove, Inc., Fallsington, Pa.
Filed Apr. 3, 1969, Ser. No. 813,150
Int. Cl. B65h *23/18*
U.S. Cl. 226—25 **14 Claims**



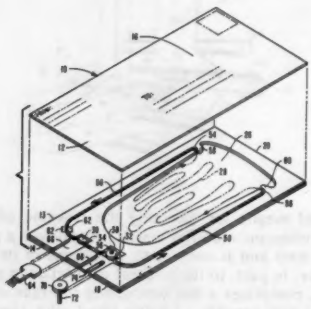
This disclosure deals with a film feed mechanism for an automatic wrapping machine including a wrapping mechanism

for wrapping each article of a series of articles in a thin protective film. The feed mechanism draws film from a film supply and feeds it to the wrapping mechanism which is constructed to pull film thereto as needed during each wrapping cycle. In the feed mechanism, film is trained around a stripper roll, through means for tensioning the film and forming a reserve supply loop, and then to the wrapping mechanism. A continuously moving drive member extends adjacent the stripper roll, and a driven member connected to the stripper roll is adapted to be drivingly engaged by the drive member in order to turn the stripper roll. Means responsive to the length of film in the reserve supply loop is connected to move the drive member into engagement with the driven member and thus turn a stripper roll when the length of film in the supply loop is depleted, and to move the drive member out of engagement with the driven member when the length of film in the supply loop is replenished.

3,591,066
DIRECTLY MAILABLE DEVICE HOUSING A MAGNETIC RECORDING MEDIUM

Norman G. Young, 409 S. Commonwealth, Apt. 12, Los Angeles, Calif.

Filed Apr. 3, 1969, Ser. No. 813,147
Int. Cl. G11b *23/06*
U.S. Cl. 226—89 **9 Claims**



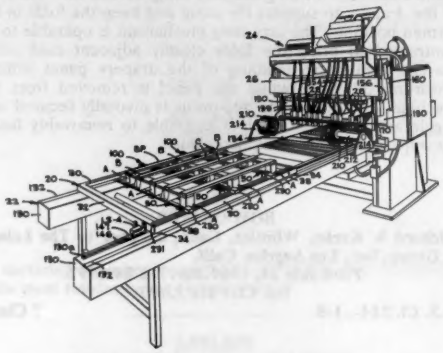
A flat, letter size housing contains a recording medium in the form of an endless loop. The medium is adapted to move within a guide channel past a pressure pad and a spring-biased pinch roller disposed within the housing and recessed or set back from one edge of the housing a sufficient distance to protect the medium during handling and mailing of the device. The transducing head and a single drive capstan are introduced into the housing, for cooperation with the recording medium opposite the pressure pad and pinch roller, through a narrow slot arrangement coupling the one edge of the housing and the guide channel.

3,591,067
ASSEMBLY JIG FOR THE NAILING OF WOOD FRAME MEMBERS

Garye R. Vial, Mira Loma, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed May 28, 1969, Ser. No. 828,489
Int. Cl. B27f *7/22*
U.S. Cl. 227—4 **13 Claims**

A jig for assembling wooden pallet members prior to nailing which jig comprises a rigid rectangular frame structure that is arranged upon a pair of parallel tracks for horizontal movement beneath an automatic nailing machine. Transversely extending and adjustably mounted support members are adapted to carry either the supporting blocks or the supporting stringers of the two basic types of pallets, and vertically yieldable plates are mounted upon said support members to underlie the overlapped top boards of the pallets and thereby allow nails to be driven through the boards to be clinched from beneath. As the assembled pallet structure passes beneath the nailing machine, a series of switches stop it at the proper locations for nailing and an overhead brush in-

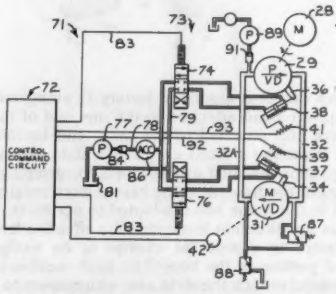


sures proper alignment of the overlying pallet members prior to nailing.

3,591,068
SPEED PROGRAMMED FRICTION WELDER

Charles G. Farmer, Edelstein; Calvin D. Loyd, Peoria; Robert G. Miller, Princeville, and Theodore L. Oberle, Washington, all of, Ill., assignors to Caterpillar Traction Co., Peoria, Ill.

Division of Ser. No. 568,920, July 29, 1966, Pat. No. 3,462,826.
This application Nov. 8, 1968, Ser. No. 795,758
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **15 Claims**



A friction welding machine of the kind in which two workpieces are rotated in rubbing contact at a common interface to develop weld heat by friction and plastic working includes a variable speed drive for rotating one workpiece with respect to the other to produce the rubbing contact and a programmer for generating a desired speed signal and a controller for producing an actual speed in accordance with the desired speed.

3,591,069
WINDOW CONTAINER PACKAGING MATERIAL

William C. Heller, Jr., and Donald W. Davis, both of Milwaukee, Wis., assignors to William C. Heller, Jr., Milwaukee, Wis., by said Donald W. Davis

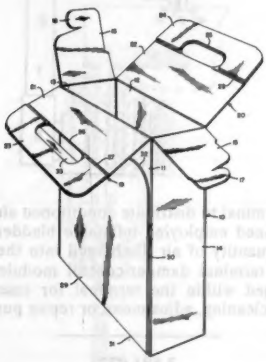
Division of Ser. No. 531,899, abandoned. This application Oct. 29, 1969, Ser. No. 872,080
Int. Cl. B65d *27/04*
U.S. Cl. 229—37 **12 Claims**

A packaging material for containers having coated window openings therein for viewing the contents. The window

openings are formed in a container base sheet and covered by a transparent window sheet secured to the base sheet. The

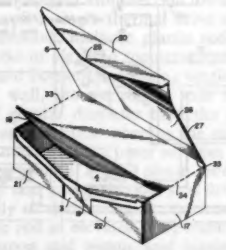
window sheet and base sheet are covered with a layer of transparent film to provide a window container packaging material having improved resistance to rupture and leakage.

3,591,070
TOTE BOX
George Vrana, Flushing, N.Y., assignor to Riegel Paper Corporation, New York, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,077
Int. Cl. B23k *1/08*
U.S. Cl. 229—38 **6 Claims**



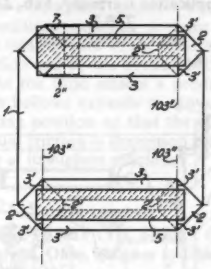
A rectangular paperboard carton having an easily erectable, flat lying carrying handle structure is disclosed. The carry handle includes a pair of full carton depth top closure flaps and a pair of tuck flaps, both of which are tuckable into the carton structure articulated to an edge of the top closure flaps. The tuck flaps include registrable handhole cutouts.

3,591,071
EASY-OPEN RECLOSEABLE CARTON
Charles W. Rosenburg, Jr., Niagara, N.Y., assignor to F.N.Burt Company, Inc., Buffalo, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,106
Int. Cl. B65d *5/54, 5/70*
U.S. Cl. 229—51 TC **12 Claims**



A recloseable carton produced from a paperboard blank and having an easy opening tear tab closure flap is disclosed. When the tear tab is torn away from the front panel of the carton and the tear tab and attached cover panel are lifted, a tear-out cover panel and a tear-out portion of the front panel are exposed which may be removed, permitting the carton to be reclosed with the cover panel covering the top of the box and the tear tab tucked along the interior side of the front panel. Conveniently, the tear-out cover panel which is torn out may be a coupon integral with the carton blank and further coupons may be retained between the cover panel and the tear-out cover panel.

3,591,072
LEAKPROOF BAG
Aldo Sannino, Romanodi Lombardia, Bergamo, Italy, assignor to Natro-Cellulosa S.P.A. Industria, Imballeggi Carta Piazza della Republice, Milano, Italy
Filed July 16, 1969, Ser. No. 842,236
Claims priority, application Italy, July 18, 1968, Feb. 5, 1969, 19148A/68;12454A/69
Int. Cl. B65d *33/02, 31/14*
U.S. Cl. 229—62.5 **12 Claims**

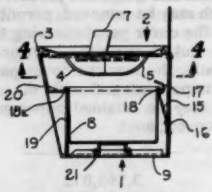


A bag, which may be provided with a valve or other discharge or filling member, is made from a flat tube of sheet material having a pair of faces joined together at opposite sides. A pair of coplanar and similar trapezoidal flaps of the sheet material are formed on the faces with each flap having a broad base joined to the respective face along a respective junction line running transverse to and between the sides. The flaps each further have a narrow base which defines a fold line with a respective rectangular lip of the sheet material, both of the lips extending inwardly toward each other and serving as the eventual bottom or top surface of the bag. The tube is further provided with two inwardly bent corner portions which bridge between the flaps and is divided by an imaginary line into a triangular and a trapezoidal region. The triangular region has two sides coextensive with and joined to two respective confronting sides of the two flaps while its base coincides with the broad base of the trapezoidal region. Between each side of each trapezoidal region and the adjacent side of each lip is a small gore of the sheet material which lies between the lip and the trapezoidal region in the finished bag. A tape is glued over the free edges of the lips and extends beyond them onto the triangular corner regions to hold the bag tightly shut.

3,591,073
WALL MOUNTED ASHTRAY WITH BOTTOM DISCHARGE RECEPTACLE
Harry F. Dennis, Cincinnati, Ohio, assignor to The F. A. Lawson Company, Cincinnati, Ohio
Filed Apr. 4, 1969, Ser. No. 813,554
Int. Cl. A24f *19/08*
U.S. Cl. 232—43.2 **3 Claims**

A wall hung ashtray or smoker's urn having a permanently attached cover part, including pivoting tray members, and a

removable ash receptacle detachably mounted within the body of the urn, the urn having an open bottom through

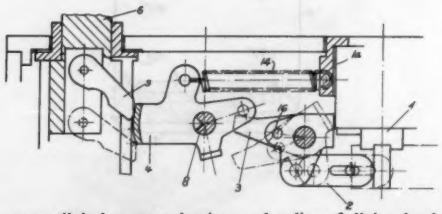


which the receptacle may be removed for the discharge of its contents.

3,591,074
PRESETTABLE COUNTER HAVING ROTARY RESETTING MEANS

Reinhard Irion, Aldingen Kreis Tuttlingen; Kurt Wilhelm Kratt, Aldingen Kreis Tuttlingen, and Hans Hermann Neher, Hausen am Tann, all of, Germany, assignors to J. Hengstler K. G. Zahlerfabrik, Aldingen KR. Tuttlingen, Germany

Filed Jan. 13, 1969, Ser. No. 790,691
Claims priority, application Germany, Feb. 22, 1968, P 15 74 738.3
Int. Cl. G06f *15/18*
U.S. Cl. 235—132 R **5 Claims**

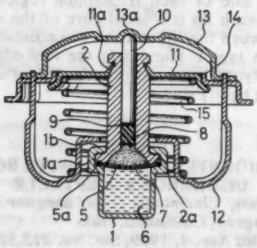


A rotary digital counter having a plurality of digit wheels adapted to assume a plurality of positions which represent respective preset counts, manually operable presetting pushbuttons for setting the digit wheels, a rotary resetting shaft, a locking arrangement adapted to assume a locking position in which a setting of the digit wheels by the presetting pushbutton is prevented; a latch normally maintains the locking arrangement in a locking position until the digit wheels are reset.

3,591,075
THERMOSTAT FOR ENGINE COOLING WATER

Yukio Onishi, 18,3, 1-chome Nakamachi Hoyashi, Tokyo, Japan

Filed July 3, 1969, Ser. No. 838,935
Int. Cl. F01p *7/16*
U.S. Cl. 236—34 **1 Claim**

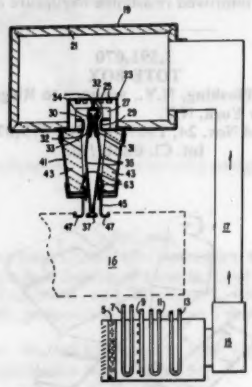


The present invention is concerned with an improvement in thermostats to be installed between the water manifold and the radiator in the cooling system of a water-cooled internal combustion engine for controlling the flow rate of the engine cooling water to assure its smooth circulation and to prevent the overheating of the engine and the deterioration of the oil by maintaining normal engine temperature to increase the durability of the engine.

3,591,076
CEILING AIR TERMINAL

David F. Bryans, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 2, 1969, Ser. No. 829,620
Int. Cl. F24f *7/00*
U.S. Cl. 236—49 **2 Claims**

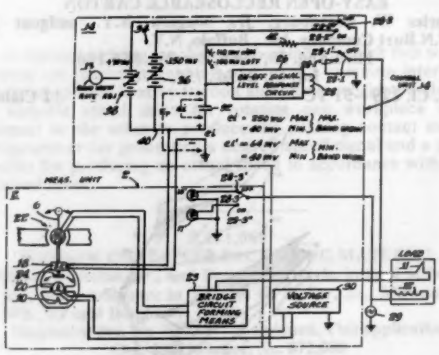


A ceiling terminal to distribute conditioned air into an area to be conditioned employing inflatable bladder dampers to regulate the quantity of air discharged into the area served thereby. The terminal damper-control module assembly is slidably engaged within the terminal for ease of removal therefrom for cleaning, adjustment, or repair purposes.

3,591,077
PROPORTIONING TEMPERATURE CONTROL APPARATUS

Ahdor H. Alton, Lake Zurich, and Michell I. Kohn, Wheeling, both of, Ill., assignors to Gulton Industries, Inc., Metuchen, N.J.

Filed May 26, 1969, Ser. No. 827,714
Int. Cl. G05d *23/22, 11/28*
U.S. Cl. 236—69 **19 Claims**



A proportioning temperature control apparatus provides for a variable width temperature band over which proportional control is effected, and wherein variation of the band-

width automatically varies the rate at which proportional control is effected at various points within the band, the rate decreasing with decreasing bandwidth. The variable bandwidth is effected most advantageously by means of a unique control circuit which utilizes a capacitor whose voltage is added or otherwise mixed with the output of a means for generating a progressively varying voltage as the temperature of the environment being controlled varies within the control band. A capacitor charge circuit selectively controls the application of a pair of variable DC voltages to the capacitor depending upon the presence or absence of heating or cooling signals in the output of the control apparatus. These DC voltages are selected to be near the voltage values to which the capacitor must be charged to effect the turn-on and turnoff of the heating or cooling producing signals involved. Variation of one or the other of the DC voltages referred to automatically varies the control bandwidth and the rate of control.

3,591,078

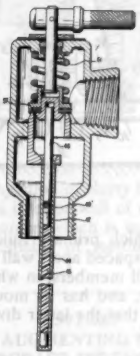
THERMOSTATIC DEVICE

Maurice Feinberg, 2 Jackson St., Waltham, Mass.

Division of Ser. No. 313,885, Oct. 4, 1968, Pat. No. 3,319,467. This application June 17, 1965, Ser. No. 481,999

Int. Cl. G05d *23/02*; G01k *5/00*

U.S. Cl. 236—93 **5 Claims**



A thermosensitive control device comprising a rigid thermally conductive casing closed at one end and open at the other end, said casing including a substantially cylindrical enclosed housing having first and second opposed end walls and a sidewall, said first and second end walls being of greater thickness than said sidewall and said first end wall having a single central opening provided therein and an elongated tubular casing section having a cross-sectional area which is less than the cross-sectional area of said housing, said casing section having open inner and outer ends, the inner end thereof being inserted into said housing through said single central opening in the first end wall thereof, said first end wall having an inner surface which angles outwardly away from the inner end of said casing section toward said sidewall and second end wall a single thermal drive element formed by a thermally sensitive, inelastic plastic rod expandable as substantially a solid at elevated temperatures below 300° F. received within said housing and casing section and abutting said second end wall, the portion of said rod within said housing being of greater diameter than the portion of said rod within said casing section whereby the outer surfaces of said rod are in contact with the inner surfaces of said housing sidewall and casing section, a drive piston received within the open outer end of said casing section, said drive piston being movable outwardly of said casing in response to the expansion of said plastic rod at elevated temperatures, and biasing means mounted upon said piston, said biasing means being operative to bias said piston toward said plastic rod to maintain said sealing means in tight sealing engagement with the inner surface of said casing section.

3,591,079

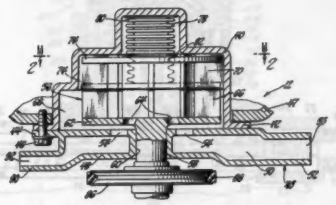
HEATING SYSTEM AND HEAT GENERATING PUMP

Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1969, Ser. No. 880,112

Int. Cl. B60h *1/08*; F02n *17/04*

U.S. Cl. 237—8 A **6 Claims**



Heating system for heating the interior of a vehicle in which an engine driven fluid pump circulates fluid through the vehicle engine, the heater core and the engine radiator. The pump has a thermally responsive bellows that moves a blocker plate to a retracted position under predetermined temperature conditions exposing a stator to the fluid flow path so that the temperature of the fluid is increased by turbulent fluid friction and by the friction between stator blades and the fluid. As the fluid attains a predetermined thermal energy level, the bellows expands to move the blocker plate to a fluid-blocking position so that the stator is out of the flow path and fluid friction is decreased thereby enabling the pump to operate at its highest efficiency.

3,591,080

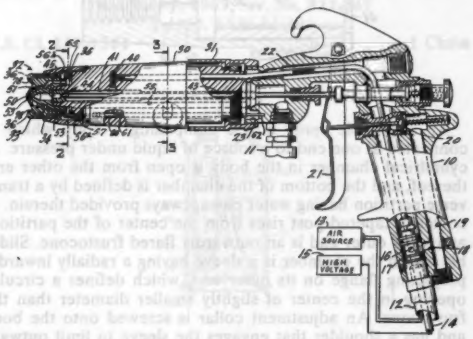
ELECTROSTATIC SPRAY GUN

Erhard Kock, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Continuation-in-part of application Ser. No. 696,938, Jan. 10, 1968, now Patent No. 3,471,089. This application Sept. 15, 1969, Ser. No. 858,009

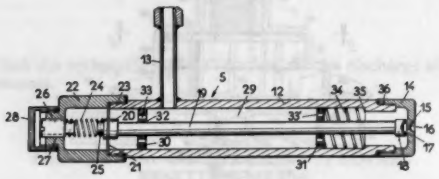
Int. Cl. B05b *5/00*

U.S. Cl. 239—15 **2 Claims**



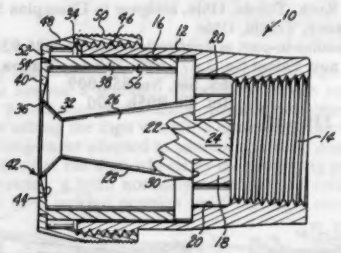
The invention is directed to an air atomizing electrostatic spray gun having a spray head of insulating material. Electrostatic charging of the fluid stream is accomplished by conduction, and it has been found that prolonged spraying causes a charge to accumulate on the spray head, with a resulting deterioration in transfer efficiency. The invention includes means to maintain the efficiency of the system by the incorporation of an intermediate potential electrode to remove any accumulation of charge from the front surfaces of the gun.

3,591,081
PROCESS AND INSTALLATION FOR BURNING LIQUIFIED HYDROCARBONS
Paul Andre, Deuil-la-Barre, France, assignor to Campagnie Des Gaz De Petrole Primagaz, Paris, France
Filed Mar. 4, 1969, Ser. No. 804,197
Claims priority, application France, Mar. 29, 1968, 146120
Int. Cl. F02m *45/10*
U.S. Cl. 239—95 **2 Claims**



A process and apparatus for burning liquified hydrocarbons in which the liquid is supplied to an injector at a pressure not less than the vapor pressure at ambient temperature and is burnt in a pulsed airflow. The injector has a valve which is spring biased and is opened by the pressure of the liquid on a diaphragm.

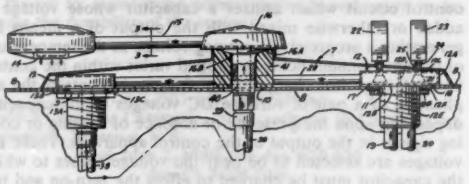
3,591,082
ADJUSTABLE SPRAY NOZZLE
Howard W. Brenner, P.O. Box 1484, Escondido, Calif.
Filed May 12, 1969, Ser. No. 823,574
Int. Cl. B05b *15/02*
U.S. Cl. 239—117 **7 Claims**



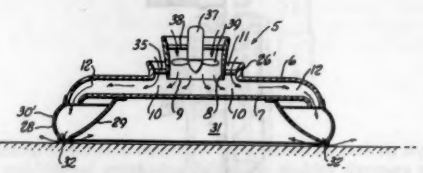
An adjustable spray nozzle comprising a body which is connected at one end to a source of liquid under pressure. A cylindrical chamber in the body is open from the other end thereof, and the bottom of the chamber is defined by a transverse partition having water passageways provided therein. A conically tapered post rises from the center of the partition, and at its outer end is an outwardly flared frustocone. Slidable within the chamber is a sleeve having a radially inwardly projecting flange on its outer end, which defines a circular opening in the center of slightly smaller diameter than the frustocone. An adjustment collar is screwed onto the body and has a shoulder that engages the sleeve to limit outward movement of the latter under fluid pressure. The closer the sleeve flange is to the frustocone, the finer the spray.

3,591,083
DOMESTIC WATER MIXING AND DISTRIBUTION DEVICE
Mac S. O'Rear, 20558 Oakfield, Detroit, Mich.
Filed Feb. 13, 1969, Ser. No. 798,958
Int. Cl. B65h *75/00*
U.S. Cl. 239—197 **9 Claims**

This application discloses a water mixing and distribution device for use on a domestic sink, washbowl, or the like. The invention resides in the particular combination and arrangement of elements which provide for the mixing of hot and cold water and the discharge of the mixed water through a portable discharge head.

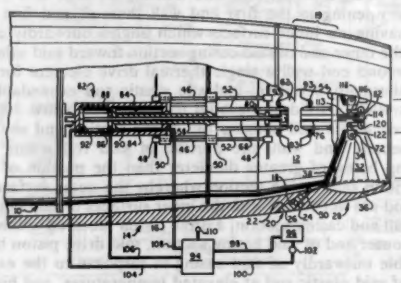


3,591,084
FLUID EJECTOR PARTICULARLY FOR CUSHION LEVITATED DEVICES
Bengt Johan Anders Ahren, Hallgatan, Sweden, assignor to SAAB Aktiebolag, Linkoping, Sweden
Filed Sept. 9, 1968, Ser. No. 758,491
Claims priority, application Sweden, Sept. 11, 1967, 12475/67
Int. Cl. B05b *3/10*
U.S. Cl. 239—224 **4 Claims**



The nozzle from which primary fluid issues has its axis transverse to a pair of spaced apart wall members. It extends through one of the wall members, in which there are secondary fluid inlet means, and has its mouth spaced from the other wall member so that the latter divergingly deflects the incoming primary fluid.

3,591,085
SOUND SUPPRESSING AND THRUST REVERSING APPARATUS
George E. Medawar, San Diego; George R. Urquhart, Bonita, and Leonard Holman, Imperial Beach, all of, Calif., assignors to Rohr Corporation, Chula Vista, San Diego, Calif.
Filed July 2, 1969, Ser. No. 838,540
Int. Cl. B64d *33/04*
U.S. Cl. 239—265.13 **10 Claims**



Apparatus comprises shroud in streamline continuation of nacelle to surround and control exhaust gas stream from tail pipe. Includes ejector ring and reverser support ring nested

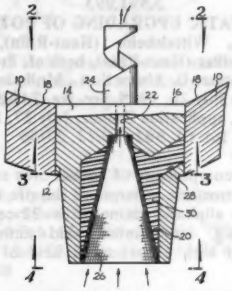
with nacelle for normal flight. Rings separate axially from each other and nacelle in second, sound suppressing position. Free stream air induced through annular passages between nacelle and ejector ring and between ejector ring and support ring to surround and mix with gas stream. In third position, ejector ring moves upstream to nest with nacelle and form reverse thrust discharge passage between rings. This maximum separation between rings causes blocker doors in support ring to close and force gas stream to issue through annular discharge passage. Rings may be adjusted directly from any one position to any other position.

3,591,086

NOZZLE FOR INJECTION OF SLURRY FUELS

Harry Levin, Woodland Hills, Calif., assignor to The Marquardt Corporation, Van Nuys, Calif.

Filed May 31, 1968, Ser. No. 733,542
Int. Cl. B05b *1/00*
U.S. Cl. 239—265.15 **7 Claims**



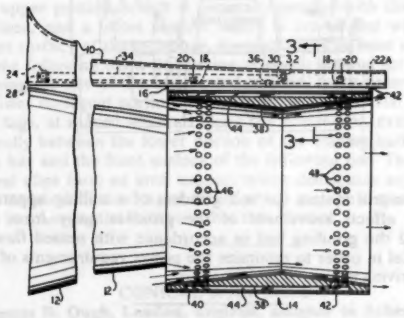
A nozzle for the injection of slurry fuels into a combustion chamber wherein the interior wall of the nozzle is formed of a fine mesh metal screen which is surrounded by a wax or waxlike substance capable of melting at a predetermined temperature.

3,591,087

APPARATUS FOR AUGMENTING THE THRUST OF AN AIRCRAFT JET ENGINE

Remo Tontini, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed May 8, 1969, Ser. No. 823,029
Int. Cl. B64c *15/10*
U.S. Cl. 239—265.17 **4 Claims**



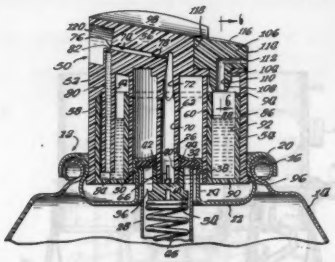
The jetstream flowing through a tubular thrust ejector is prevented from detaching from the inner surface thereof by admitting a portion of the boundary layer of said jetstream into holes which terminate within an area encircling the aft portion of said inner surface and which communicate with the forward portion of the ejector throat.

3,591,088

ATOMIZER SPRAYHEAD CONSTRUCTION

Edward H. Green, 711 Army Trail Road, Addison, Ill.

Filed Dec. 31, 1968, Ser. No. 788,252
Int. Cl. A62c *13/60*
U.S. Cl. 239—304 **13 Claims**



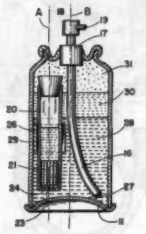
There is provided an atomizer sprayhead which is formed of two molded components, namely, a cap member and a cup member, the cap member being telescopically engaged over the cup member to define a sprayhead body having an internal, independent reservoir, said cap carrying a hollow depending stem arranged to engage the valve plunger of an aerosol valve assembly, the interior of said stem defining a first or primary expansion chamber, and said cap further carries a depending riser tube adapted to be disposed within said reservoir when the cap and cup telescopically are engaged. Horizontal conduit means are provided communicating between the primary expansion chamber and the discharge orifice, a portion of said means comprising a secondary expansion chamber, and the riser tube and said horizontal conduit means being so arranged so that the discharge jet of product from the latter is directed angularly upward relative to the outlet port of the riser tube to create an area of low pressure thereat, whereby to draw liquid from the reservoir, through the riser tube and out the outlet port into the flowing product stream.

3,591,089

PORTABLE SPRAY MEANS FOR DUAL LIQUIDS

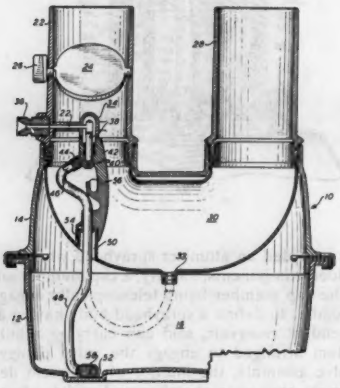
Philip J. Cronan, Los Angeles, Calif., assignor to Rubin Mandel, Los Angeles, Calif., a part interest

Filed May 7, 1969, Ser. No. 822,547
Int. Cl. A62c *31/30*
U.S. Cl. 239—304 **1 Claim**



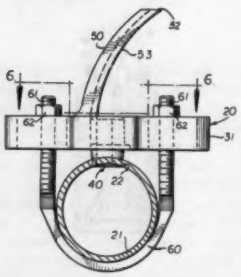
A spray can for resin paints under pressure incorporates a secondary container in its interior for holding a catalyst. A spray means including a spray valve is received on one end of the cam and includes an elongated tube extending into the can. The secondary container includes inertia means in the form of a weight. The arrangement is such that shaking of the can causes the weight to shatter the secondary container thereby placing the catalyst and resin in communication with each other. Mixing of the ingredients can thus take place just prior to a spraying operation, the mixture passing up through the tube and out the spray means when the spray valve is opened.

3,591,090
NEBULIZER
Douglas D. Carden, Barneveld, Wis., assignor to Air Reduction Company, New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,518
Int. Cl. A61m *11/02*
U.S. Cl. 239—305 7 Claims



A mechanical nebulizer having a first reservoir for containing bulk use fluid for nebulization and a second reservoir for containing a medicament whereby the medicament may be selectively and independently supplied for nebulization and wherein circulation of fluid is provided during nebulization of either the bulk fluid or the medicament.

3,591,091
DEFLECTOR-TYPE SPRAY NOZZLE
Roderick S. Galloway, Chalfont, and Albert B. Luecke, Jr., Cheltenham, both of, Pa., assignors to FMC Corporation, San Jose, Calif.
Filed Jan. 28, 1969, Ser. No. 794,510
Int. Cl. B05b *1/26*
U.S. Cl. 239—523 13 Claims



This invention relates to a deflector type spray nozzle for mounting on a pipe to obtain a flat trapezoidal shaped spray pattern. The spray nozzle is made entirely of a strong durable plastic resistant to corrosion and abrasion. It is equipped with a selftlocating interchangeable bushing which may be easily changed to obtain different flow rates by means of a different size orifice and which fits in a simple straight hole in the pipe without auxiliary sealing means. A single size U-bolt and single size deflector assembly may be used for pipe sizes of 1 inch to 3 inches inclusive.

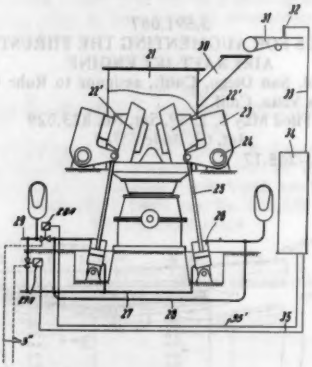
3,591,092
DISCHARGE TIP FOR FUEL INJECTION NOZZLE
Vernon D. Roosa, West Hartford, Conn.
Division of Ser. No. 703,488, Oct. 5, 1967, abandoned. Division of Ser. No. 455,913, May 14, 1965, Pat. No. 3,350,963. This application Oct. 13, 1969, Ser. No. 865,828
Int. Cl. B05b *1/30*
U.S. Cl. 239—601 2 Claims

A discharge tip for a fuel injection nozzle comprises a hollow body having a bore closed at one end and open at the other with the closed end being of reduced size relative to the open end and terminating in a partispherical tip exceeding a hemisphere connected with the remainder of the body by an annular necked down surface portion coaxial with the bore and intermediate the ends thereof and having a plurality of radially directed discharge passages in the partispherical portion of the tip with at least one of the orifices disposed in the portion of the partispherical tip outside the hemispherical portion which is concentric with the axis of the elongated bore.

3,591,093
ELECTROSTATIC UPGRADING OF POTASH ORES
Robert Berthon, Wittelsheim (Haut-Rhin), and Michel Bichara, Richwiller (Haut-Rhin), both of, France, assignors to Mines De Potasse D. Alsace S. A., Mulhaise, France
Filed July 26, 1968, Ser. No. 747,837
Claims priority, application France, July 27, 1967, 115859
Int. Cl. B02c *19/12, 23/06*
U.S. Cl. 241—15 17 Claims

The insoluble components of potash ores are substantially removed by electrostatic separation, the ore being first conditioned with an aliphatic amine of 8—22 carbon atoms or salts thereof, e.g. laurylamine, said amine being also preferably mixed with a carboxylic acid of 8—22 carbon atoms.

3,591,094
CONTROL SYSTEM FOR ROLL GRINDERS
Peter Gauer, Kamper Weg 98, Dusseldorf, Eller, Germany
Filed Feb. 20, 1969, Ser. No. 801,032
Int. Cl. B02c *15/00, 25/00*
U.S. Cl. 241—37 3 Claims

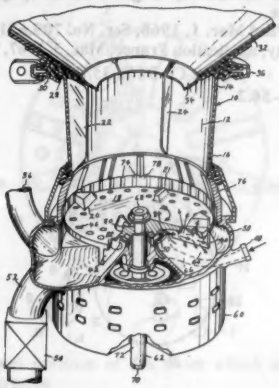


A control system for roll grinders of a milling apparatus which effects movement of the grinders away from and toward the grinding bed in accordance with sensed flow of material in order to minimize the power requirements of the mill driving means.

3,591,095
COMBINATION GARBAGE GRINDER AND PUMP
Albert Di Stefano, 3013 Northwales Road, Norristown, Pa.
Filed Nov. 25, 1968, Ser. No. 784,996
Int. Cl. B02c *18/40*
U.S. Cl. 241—41 15 Claims

A combination garbage grinder and pump including an integral upper shredder plate and lower pump impeller which

rotates at the bottom of a liquid and waste receiving pit, the pit having a wider diameter at the top thereof than at the said shredder plate, the integral shredder plate and pump impeller



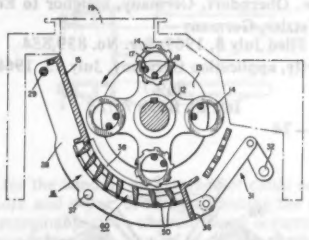
being capable of both grinding waste material for discharge recirculation to a drain or alternately of pumping liquids through a liquid discharge pipe.

3,591,096

SCREEN BAR

Ralph R. DeFeo, Upper Darby, Pa., assignor to Pennsylvania Crusher Corporation, Broomall, Pa.

Filed Feb. 12, 1969, Ser. No. 798,605
Int. Cl. B02c *13/13, 13/284*
U.S. Cl. 241—88 **3 Claims**



A screen bar cage for a rotary crusher is disclosed in which the screen bars are specially shaped to accurate dimensions by being formed of rolled steel cut to length. The front impact-receiving surface of each bar is a flat plane, inclined relative to the radial of the machine. The trailing surface has an upper portion, which is generally parallel with the front surface, and a lower portion which is convergent with the front surface of the same bar, forming with the front surface of the following bar a slot having an upper portion for determining the size of the fragmented material to be passed, and a lower divergent portion for discharging the material. Spacing lugs, at spaced intervals along the screen bar, extend integrally between the lower portion of the trailing surface of one bar and the front surface of the following bar. These integral clips form an arch support which distributes any radially outward or downward thrust which may be imposed on one bar, among the bars on either side thereof.

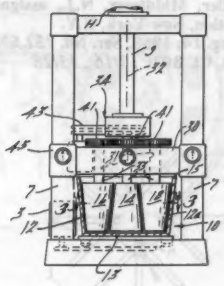
3,591,097

CONICAL ROLL MILL

Thomas D. Ough, London, England, assignor to Acheson Industries, Inc., Port Huron, Mich.

Filed Feb. 24, 1969, Ser. No. 801,589
Claims priority, application Great Britain, Feb. 28, 1968, 9717/68
Int. Cl. B02c *2/00*
U.S. Cl. 241—113 **10 Claims**

A conical roll mill apparatus comprised of three or more vertically or horizontally oriented rolls, with the rolls being conically tapered such that the speed of relative movement between mating rolls or a mating roll and the interior surface of the container holding the roll mill is such that the speed will vary along the length of the line of mating contact, whereby said variable speed causes material being mixed or



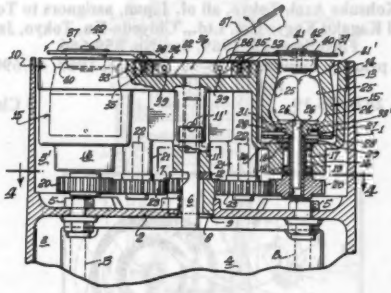
milled between the rolls not only to be caught in the nip contact area by the rolls but also causes a strong shearing effect on the material, and at least one of said rolls being movable axially in order to adjust the amount of clearance which occurs at the nip.

3,591,098

DENTAL AMALGAM PREPARING APPARATUS

Robert C. McShirley, 6535 San Fernando Road, Glendale, Calif.

Filed Feb. 11, 1969, Ser. No. 798,337
Int. Cl. B02c *17/08, 19/08*
U.S. Cl. 241—137 **5 Claims**



Improved apparatus for preparing dental amalgam from pellets of compressed metal alloy powder and mercury including elements operative to pulverize the pellet in a container before the mercury is added into the same container and then is operative to both mix the mercury with the powder and then to effect a mulling action on the resulting amalgam so that the pellet of amalgam is ready for installation in the creation of a dental restoration. The illustrated embodiment includes duplicate containers so that while pulverizing action is being performed in one container, the powder resulting from a previously pulverized pellet is being combined with mercury in the performance of the mixing and mulling actions.

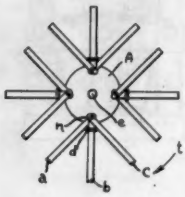
ERRATUM

For Class 242—055 see:
Patent No. 3,590,907

3,591,099
SOLID MATERIAL BEATING MEANS WITH PLURAL BLADES

Thomas Harry Sadler, Middlesex, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Aug. 14, 1968, Ser. No. 752,633
Int. Cl. B02c *13/16;, 13/28*
U.S. Cl. 241—194 9 Claims

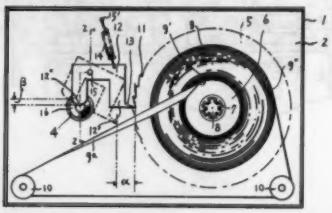


A removable beater-blade for use in either a fiberizer or a willow, for releasing asbestos fibers from ore and for further fiberizing the asbestos fibers, the beater-blade including two or more blades mounted on a common pin near the peripheral edge of a rotatable disc with each of the individual blades extending in different directions such that a commonly mounted blades are staggered with each leading blade at a lower level than each following commonly mounted blade, and the leading edge of each blade is lower than the following edge whereby when the disc is rotated each pitched blade creates an air pressure above each blade and a vacuum turbulence beneath each blade as the disc-mounted blades revolve in a path substantially perpendicular to the path of movement (or falling) asbestos ore and/or fibrous material.

3,591,100
ENDLESS TAPE CASSETTE

Fukuzo Itoh, Yokohama-shi; Masaoki Sekine, Kawasaki-shi, and Kohsuke Arai, Tokyo, all of, Japan, assignors to Tokyo Denki Kagaku Kogyo Co., Ltd.,, Chiyoda-Ku, Tokyo, Japan

Filed Sept. 22, 1969, Ser. No. 859,666
Claims priority, application Japan, Sept. 26, 1968, 43/69073
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 3 Claims

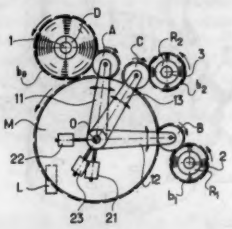


A cassette having two axis holes to receive two spindles of a tape recorder. A rotating plate having a hub fits over the first spindle. The endless tape is wound around the hub to form an endless reel. A U-shaped checking lever having two legs is pivoted to the cassette casing at a point closer to one leg than the other. One leg has a pawl on its end for engaging cogs around the periphery of the rotating plate. The other leg has a tapered undersurface which cooperates with a tapered edge of the second spindle. A spring biases the lever to engage the pawl and cogs.

3,591,101
MACHINE FOR CUTTING THIN STRIPS

Georges L. Gallet, La Celle Saint Cloud, and Claude Guenel, Orsay, both of, France, assignors to Compagnie Generale D'Electricite

Filed Mar. 1, 1968, Ser. No. 709,631
Claims priority, application France, Mar. 3, 1967, 97438
Int. Cl. B65h *35/02*
U.S. Cl. 242—56.2 7 Claims

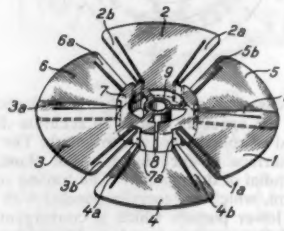


The machine is equipped with balanced transfer mandrels which are dimensioned and positioned in such a way that a web to be cut into narrow strips is supported over its entire length and is subjected to a constant tension. Cutting blades are mounted in a blade-carrier which may be tilted to match the cutting angle to the type of web to be cut.

3,591,102
SELF-CATCHING SPOOL FOR TAPELIKE RECORD CARRIERS

Heinz Keiner, Oberndorf, Germany, assignor to Ernst Leitz, GmbH, Wetzlar, Germany

Filed July 8, 1969, Ser. No. 839,854
Claims priority, application Germany, July 15, 1968, P 17 72 869.7
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 1 Claim



A spool for tapelike record carriers which automatically grips the record carrier strip as it is inserted between the flanges of the spool.

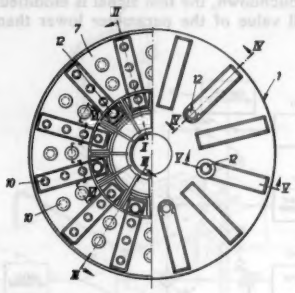
3,591,103
REEL CONSTRUCTION

Erich Hafner, Daktor Kamp 11, Leopoldshoehe, Germany

Filed June 6, 1969, Ser. No. 831,108
Claims priority, application Germany, June 15, 1968, P 17 74 420.6
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.7 15 Claims

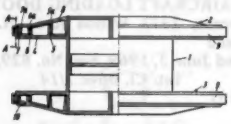
A reel for wire and analogous articles has a hub and a pair of flange members which project radially from the hub in the region of the opposite ends of the latter. Each flange member is of laminar construction and includes at least one first layer of metallic reinforcing material provided with a plurality of apertures, and at least one second layer of synthetic plastic material in surface-to-surface contact with one side of the

first layer and having synthetic plastic portions which extend through the apertures to the other side of the first layer and



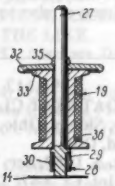
embed marginal portions of the latter which surround the respective apertures.

3,591,104
RESILIENT CABLE DRUM
Erich Hafner, Doktor Kamp 11, Leopoldshohe, Germany
Filed May 19, 1969, Ser. No. 828,095
Claims priority, application Germany, May 21, 1968, P 17 74 308.7
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.7 **12 Claims**



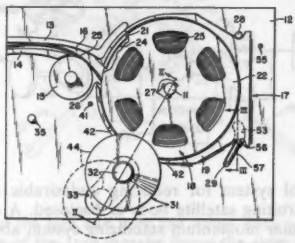
A drum for the winding and storage of cable or wire comprising a core and a pair of flanges flanking the ends of the core. The marginal portion of each flange is surrounded by a resilient, nondeformable ring of metal or synthetic plastic which intercepts impact and shock forces applied to the edges of the flanges, thereby protecting the drum from damage.

3,591,105
SPOOL HOLDER FOR SEWING MACHINES
Silvano Perlino, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy
Filed July 14, 1969, Ser. No. 841,462
Claims priority, application Italy, July 29, 1968, 32413 A/68
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.7 **7 Claims**



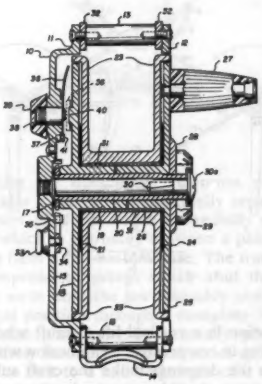
A support means for sewing machine spools of the flanged and flangeless types and for use in machines wherein the thread is pulled axially off stationary spools.

3,591,106
STRIP THREADING MECHANISM
Elmer O. Wangerin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,435
Int. Cl. G11b *15/66, 23/10*
U.S. Cl. 242—210 **6 Claims**



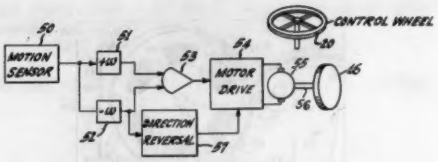
In a projector or the like incorporating a film threading device embodying a roller member which engages and flexes the flanges of a film reel rotating in an unwinding direction to cause the leading end of a roll of film wound onto the reel to separate from the roll and enter a film guide channel, means are provided for automatically retracting the roller member to an inoperative position during installation and removal of a magazine loaded film reel.

3,591,107
FLY REEL
Roland W. Ferguson, Aurora, Colo., assignor to Wright & McGill Co., Denver, Colo.
Filed Feb. 11, 1969, Ser. No. 798,415
Int. Cl. A01k *89/02*
U.S. Cl. 242—219 **9 Claims**



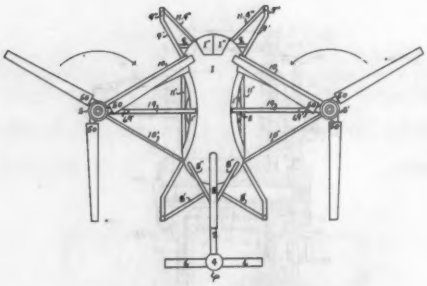
Single action fly reel arranged for spool regulation to include or omit drag. Reel assembly has means selectively operable to control the direction of reel wind so as to permit right- or left-hand operation and includes rigid frame and main shaft acting as bearing for two sideplates carrying interlocking portions of a split shaft with one sideplate also carrying a grip for winding the reel. A line spool is mounted between the sideplates around the split shaft and friction discs are disposed between the sideplates and line spool. Adjustable means are disclosed for applying pressure selectively to the sideplates, line spool and friction discs, thereby to create or eliminate drag.

3,591,108
CONTROL SYSTEM FOR SPINNING BODIES
Harold Perkel, Levittown, Pa., and William Herbert Comerford, Hightstown, N.J., assignors to RCA Corporation
Filed Jan. 27, 1967, Ser. No. 612,209
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 **3 Claims**



A control system for reducing undesirable motion in a spinning, orbiting satellite body is disclosed. A satellite having an angular momentum stabilizing system aboard is compensated in a manner to substantially reduce undesired motion about an axis, which may be the spin axis. A motion sensor is placed aboard the satellite to derive a signal proportional to the direction and magnitude of the undesired motion. This signal is used to rotate a flywheel, whose axis of rotation is perpendicular to the spin axis of the satellite. The flywheel is rotated either clockwise or counterclockwise depending on the signal from the motion sensor, causing the flywheel to produce an equal and opposite torque to the disturbing torque about the spacecraft's spin axis. This action damps out the undesired motion by counteracting the undesired torque.

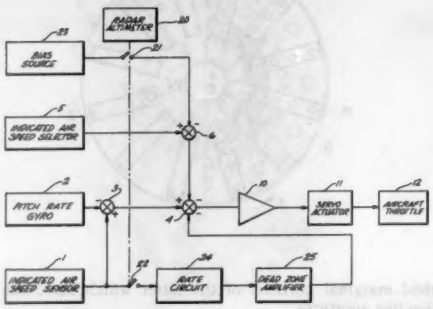
3,591,109
ROTARY WING AIRCRAFT
Frank W. McLarty, 634 West 10th St., Apt. 8, Dallas, Tex.
Filed June 29, 1966, Ser. No. 562,939
Int. Cl. B64c *27/08*
U.S. Cl. 244—17.23 **12 Claims**



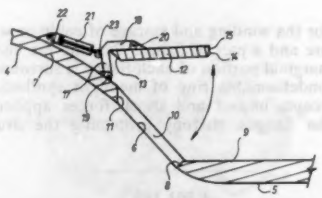
This invention is a vertical-lift aircraft whose various features operating in cooperative conjunction with each other as illustrated in the drawings make the craft substantially foolproof, so that any sensible owner-operator capable of driving an automobile safely can fly one of said aircraft with almost perfect safety, even though he or she may never have been off the ground previously.

3,591,110
AUTOMATIC THROTTLE CONTROL SYSTEM FOR AN AIRCRAFT
Kenneth C. Dramer, Thousand Oaks, Calif., and Harold N. Tobie, Mercer Island, Wash., assignors to Lear Siegler, Inc.
Filed Apr. 21, 1969, Ser. No. 817,780
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **10 Claims**

During a landing maneuver, a conventional automatic throttle control system for an aircraft actuates its throttle in response to a first signal representative of the desired descent value of an aircraft parameter that influences proper throttle position during landing and to a second signal representative of the actual value of the parameter. As the aircraft approaches touchdown, the first signal is modified to represent a near stall value of the parameter lower than the desired touchdown value, so the throttle normally retards to its minimum position. If conditions cause a drop in the actual value of the parameter below the near stall value, the control system advances the throttle to correct the discrepancy. The corrective action is augmented by a third signal, representing the rate of change of the second signal, when the third signal exceeds a threshold value.



3,591,111
AIRCRAFT LOADING DOOR
William G. Spence, 2372 Wilson Ave., N.D.G., Montreal, Quebec, Canada
Filed June 3, 1969, Ser. No. 829,909
Int. Cl. B64c *1/14*
U.S. Cl. 244—137 **4 Claims**

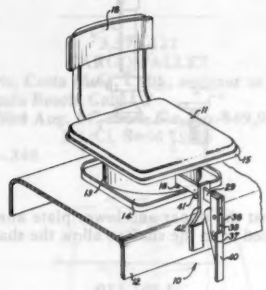


An opening mechanism for an inclined aircraft door including an angular member pivoted to the aircraft fuselage and to the door inwardly of the door edge, so that power pivoting of the angular member causes pivoting opening movement of the door about an edge remote from said member until the door abuts the angular member and further pivoting of said member causes the latter and the door to move as a unit. The mechanism allows the door to fully clear the door opening and serves also to lock the door in closed position.

3,591,112
BOAT SEAT CLAMP
Edwin J. Garmhausen, Sidney, Ohio, assignor to Scott Port-A-Fold, Inc., Archibold, Ohio
Filed Dec. 3, 1969, Ser. No. 881,653
Int. Cl. A47f *5/00*
U.S. Cl. 248—226 B **1 Claim**

A boat seat clamp for detachably securing a fishing chair to a bench-type boat seat by friction clamping to the boat seat. The clamp is provided with a horizontal bar which can be adjusted for length and is secured to the fishing chair. A

clamp member is slidably mounted on one end of the bar and locks to the bar by cam action under clamping pressure. A second clamp member is also mounted on the other end of



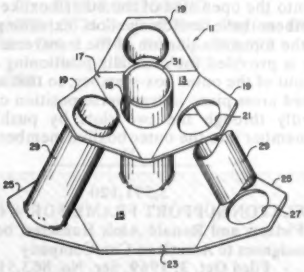
the bar in a position to be engaged by hand actuated eccentric which presses the second clamp member inwardly toward the first clamp member to detachably clamp the boat seat therebetween.

3,591,113

MAST SUPPORT

Hugh F. Foster, Jr., Brooklyn, N.Y., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 13, 1970, Ser. No. 2,615
Int. Cl. H01q *1/12*; E04h *12/22*
U.S. Cl. 248—44 **5 Claims**



A means for supporting a mast that includes a pair of spaced, joined, parallel top and bottom plates with the top plate provided with an opening that accommodates a tube extending to the bottom plate in which a mast may be supported. Both plates have corresponding opposing tab portions having corresponding openings through which supporting legs can be inserted for support of the mast structure.

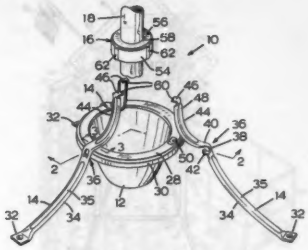
3,591,114

STAND FOR AN ARTIFICIAL CHRISTMAS TREE AND THE LIKE

Thomas Samuel Beatty, 51 Alamosa Drive, Willowdale, Ontario, Canada

Filed Feb. 24, 1970, Ser. No. 13,568
Claims priority, application Canada, Feb. 26, 1969, 043,977
Int. Cl. A47g *33/12*
U.S. Cl. 248—48 **5 Claims**

A stand for artificial Christmas trees having a bowl for receiving and locating the lower edge of the stem of the tree. The upper edge of the bowl has a circumferential lip defined by a circular flange and a peripheral downwardly extending flange. Three identical legs are employed and they are adapted to hook onto skirt and flange near the midpoints of the legs. The upper ends of the legs are bent inwardly and are shaped to grip the stem of the tree. A ring through which the stem of the tree is inserted is shaped so that it can receive the



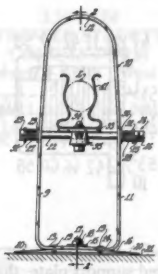
upper ends of the legs and urge the upper ends into contact with the stem of the tree thereby fixing the stem securely to the stand and automatically centering the stem in the stand.

3,591,115

PORTABLE FLASHLIGHT HOLDER

Glenn A. Hibbard, 1716 W. 165th Pl., Gardena, Calif.

Filed Jan. 12, 1970, Ser. No. 2,281
Int. Cl. A47g *29/00*; F21l *15/08*
U.S. Cl. 248—122 **4 Claims**



Portable holder for detachable retention of cylindrical flashlight, provides a pair of longitudinally separated spring jaws on a support platform which is medially secured to a rotatable shaft which is journaled between a pair of upstanding arms arising from a flat-bottom base. The transverse shaft has coaxial compression springs which abut the respective upright arms so as to hold the jaw assembly and flashlight at any set rotational position through a complete 360° possible rotation. The base plate may be centrally pivoted to the frame or alternately have a peripheral series of openings for attachment of the unit to a nail or hanger of a vertical wall. Otherwise the base stands on a more-or-less level surface or is carried by a top handhold which connects the upright arms.

3,591,116

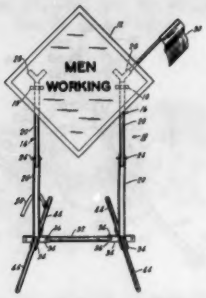
COLLAPSIBLE SIGN STAND

Clarence E. Dalum, 12915 Gremoore Drive, Elm Grove, Wis.

Filed Nov. 28, 1969, Ser. No. 880,872
Int. Cl. F16m *1/38*
U.S. Cl. 248—166 **7 Claims**

A collapsible stand for supporting signs and the like above the ground includes a pair of spaced upright posts for receiving the sign. A tie bar joins the posts and is hinged to the lower ends of the posts. A plurality of elongated feet hinged

to the lower ends of the posts lie normal to the tie bar. The tie bar and feet abut the ground for retaining the stand in



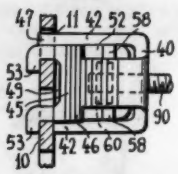
position, while at the same time, maintaining the posts upright.

3,591,117

CLAMP FOR MOUNTING EQUIPMENT ON APERTURED SUPPORT PLATES

Emilio Lorenzo Mazzetti, Torino, Italy, assignor to Ghisalba s.p.a., Turin, Italy

Filed Sept. 23, 1969, Ser. No. 860,185
Claims priority, application Italy, Dec. 17, 1968, 54322 A/68
Int. Cl. A47j 5/00; A47b 97/00
U.S. Cl. 248—224 5 Claims



A clamp adapted for connecting the fixing members of a device to an apertured support plate, this clamp comprising a coupling stirrup with feet engageable in the apertures of the support plate, and a connecting plate inserted with limited mobility within the coupling stirrup and provided with a threaded hole for the connection of a fixing member of the device to be supported, which passes through an elongated aperture of the coupling stirrup, thus allowing the supported device to be movable within certain limits on the support plate, so that all the fixing members thereof may be connected to the support plate by means of a corresponding plurality of clamps, even when the distances among the fixing members are different from the distances among the apertures of the support plate.

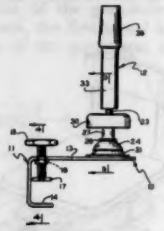
3,591,118

ANGULARLY ADJUSTABLE WIG BLOCK SUPPORT

Robert J. Gentile, Onandaga, and Arthur G. Martineau, Jr., Syracuse, both of, N.Y., assignors to Gemini Products, Inc., Syracuse, N.Y.

Filed May 8, 1969, Ser. No. 823,117
Int. Cl. A47f 5/12; F16c 11/06
U.S. Cl. 248—226 2 Claims

An improved block support for simulated heads, called blocks, on which wigs are mounted for styling. The support includes a vertically extending shaft adapted at its top for connection to the block and a base portion having a clamp for securing it to a table and a horizontally extending plate. The plate has spherically rounded upper and annular portions through which the reduced, threaded lower end of the shaft extends. A locking nut on the threaded shaft is adapted to squeeze spherically curved annular members carried on



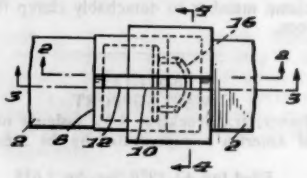
the shaft against the upper and lower plate annular portions which are spaced from the shaft to allow the shaft to tilt.

3,591,119

HOLDER FOR CUFF LINKS AND THE LIKE

Arthur D. Norrod, 7335 Howard Court, Falls Church, Va.

Filed July 1, 1970, Ser. No. 51,520
U.S. Cl. 248—309 5 Claims



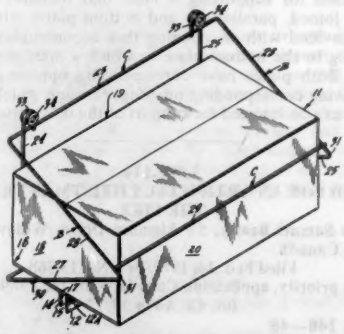
An arrangement for holding cuff links of the type having a pivoted cross bar at one end is composed of an outer boxlike member opened at one side and an inner boxlike member slidable into the open side of the outer boxlike member. The two members have matching slots extending downwardly through the top and a portion of the transverse walls of each. A spring is provided for normally positioning the inner box member out of the outer box-member, so that a cuff link with the pivoted cross piece in transverse position can be inserted downwardly through the two slots by pushing the inner boxlike member into the outer boxlike member.

3,591,120

SKELETON SUPPORT FRAME FOR A CARTON

Ivan A. Fietzer, and Ronald Alois Hanseter, both of Neenah, Wis., assignors to American Can Company

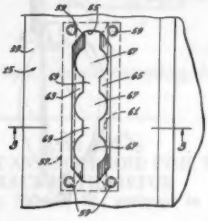
Filed Oct. 3, 1969, Ser. No. 863,516
Int. Cl. A47k 1/08
U.S. Cl. 248—311 7 Claims



A skeleton supporting frame for a generally rectangular dispensing carton, containing a plurality of thin, interfolded plastic sheets and having a slot in a bottom wall thereof. The frame includes a rectangular base, with a lengthwise, elevated ledge, a pair of elevated side members, a top member, and a lengthwise support bar, between the base and

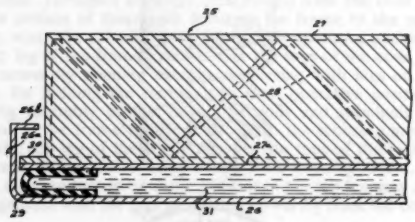
the top member and connected to the side members. The support bar is spaced from the ledge so that, as a lengthwise corner portion of the bottom of the carton is biased against the ledge, the bottom wall of the carton is supported by the bar above the base.

3,591,121
CARGO PALLET
Peter P. Parris, Costa Mesa, Calif., assignor to Fridair Industries, Redondo Beach, Calif.
Filed Aug. 14, 1969, Ser. No. 849,989
Int. Cl. B65d 19/38
U.S. Cl. 248—346 14 Claims



A cargo pallet including a broad panel and an edge rail extending for a substantial distance around the periphery of the panel. The edge rail includes first and second spaced flanges interconnected by a web. The edge rail receives a marginal portion of the panel, and the peripheral surface of the panel is held in spaced relationship to the web of the edge rail. The cargo pallet uses narrower face sheets.

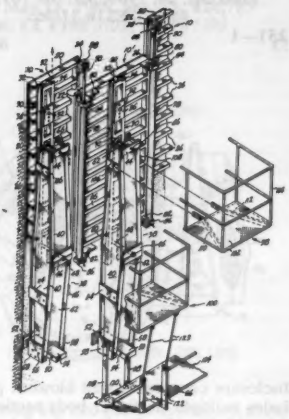
3,591,122
HYDROSHORING
Stephen R. Mehaffie, 3876 Herford Trail, Dayton, Ohio
Filed Oct. 1, 1969, Ser. No. 862,693
Int. Cl. F16m 13/00
U.S. Cl. 248—350 5 Claims



A cargo aircraft pallet having a bottom pressure plate, a sealed compartment filled with hydraulic oil and encompassing the bottom plate, and a cargo-supporting platform floating on top, and thereby supported by the hydraulic oil. The floating platform is movable, under a cargo load, relative to the bottom plate to thereby form a pressure that is evenly transmitted throughout the hydraulic oil over the relatively wide area of the bottom plate to thereby substantially reduce the force applied to the floor of the aircraft.

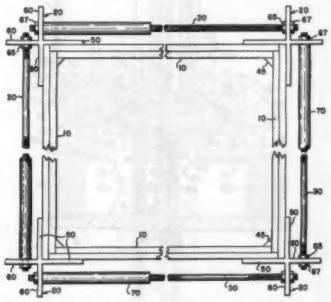
3,591,123
FORMING METHOD AND APPARATUS
Andrew D. Edwards, Box 563, Mossyrock, Wash.
Filed Aug. 8, 1968, Ser. No. 751,192
Int. Cl. E01g 5/12; B66f 1/00
U.S. Cl. 249—10 9 Claims

Plural form wall panels are horizontally successively joined together by vertical slide joint means. Alternate panels are disconnected from hardened concrete, are raised vertically by hydraulic rams carried by the intermediate panels until portions of such alternate panels are above the hardened concrete, and are resecured to the concrete at the higher level. The intermediate panels are thereafter disconnected,



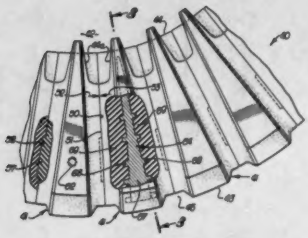
pulled upwardly to the new level by the rams, and are resecured to the concrete at the higher level in horizontal alignment with the alternate panels.

3,591,124
INTEGRAL PRESTRESSED STRUCTURAL CONCRETE COLUMN FORM
Andrew Robert Haslett, 6603 West Broad St. Road, Richmond, Va.
Filed Aug. 11, 1967, Ser. No. 660,017
Int. Cl. E04g 13/02
U.S. Cl. 249—48 5 Claims



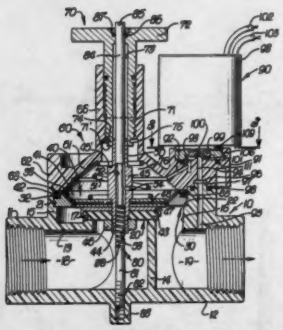
Apparatus for forming structural concrete members comprising a plurality of mold panels assembled in the desired shape of the structural concrete member and corner bars adapted to engage and hold the mold panels together along longitudinal lines of intersection. The corner bars are preferably rigid angles having lugs extending away from the structural member and being adjustably interconnected tie rods thus enabling the corner bars and panels to produce various size forms, and to be quickly and conveniently set, removed and reused. The principle advantages are derived from the novel corner bars and the manner in which the corner bars are secured together by the members so as to form a lightweight, easily assembled and disassembled structure, yet which is capable of handling heavy, rigorous jobs.

3,591,125
MULTIPLE-SECTION WELL BLOWOUT PREVENTER PACKER
George E. Lewis, Arcadia, Calif., assignor to Hydril Company, Los Angeles, Calif.
Filed Oct. 14, 1968, Ser. No. 767,193
Int. Cl. E21b *33/06*
U.S. Cl. 251—1 11 Claims



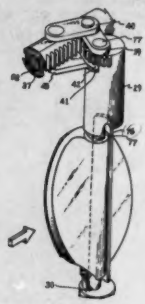
The disclosure concerns a well blowout preventer packer that includes multiple elastomer body sections formed to be arranged in side-by-side circular series relation for coaction to seal off a well in response to simultaneous constriction.

3,591,126
PLASTIC VALVE HOUSING CONSTRUCTION WITH ADJUSTABLE TIMING STEM
Fred Hauser, 1544 Midvale Ave., Los Angeles, Calif.
Continuation of application Ser. No. 617,949, Feb. 3, 1967, now abandoned. This application June 6, 1968, Ser. No. 739,936
Int. Cl. F16k *31/385*
U.S. Cl. 251—30 13 Claims



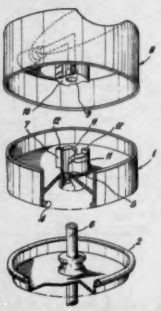
This invention relates in general to water and other fluid controlling valves, particularly diaphragm-actuated-type water valves. More particularly, the present disclosure pertains to an improved plastic valve body construction adapted for use in diaphragm-actuated-type valves and an externally adjustable fluid flow control means for controlling the time required for opening and particularly for closing the valve to avoid momentarily great fluid pressures normally occurring in the associated conduits on fast closing of the valve. The relief of fluid pressure above the diaphragm to open the associated valve is accomplished by a solenoid-actuated valve mounted in a plastic housing which is easily assembled or disassembled to the plastic valve body and in an alternative exemplary embodiment, an air cushion or air pressure chamber is provided within the valve body to slow the closing of the valve means and cushion the buildup of fluid within the valve body during such closing of the valve.

3,591,127
BUTTERFLY VALVE STRUCTURE WITH COMBINED TRANSLATION AND ROTARY MOVEMENTS
Julian Luger, Torrance, and Stanley E. Summers, Woodland Hills, both of, Calif., assignors to Ametak, Inc., New York, N.Y.
Filed Sept. 30, 1968, Ser. No. 763,546
Int. Cl. F16k *1/22, 1/24*
U.S. Cl. 251—56 9 Claims



Valve structure with a combined poppet and butterfly action including a solid shaft connected to a sleeved valve closure. A web member is connected to opposed eccentric shaft bearings and disposed in an eccentric position to the shaft.

3,591,128
VALVE ASSEMBLY
Jean Ramis, Yvelines, France, assignor to Etablissements Valois, Marly-Le-Roi, Yvelines, France
Filed June 27, 1969, Ser. No. 837,199
Claims priority, application France, July 8, 1968, 158,225
Int. Cl. F16k *35/00*; B65d *83/06*
U.S. Cl. 251—100 10 Claims

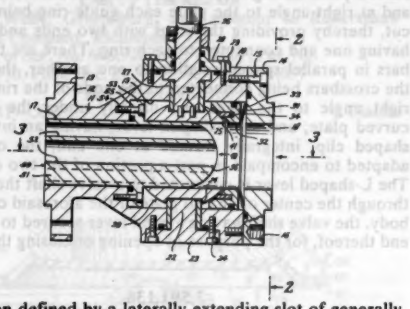


The accidental release of fluid from containers in which it is under gas pressure, e.g., aerosol canisters, may be prevented by making part of the valve assembly rotatable about the valve stem. In one rotary position the pushbutton may be depressed while in another rotary position abutments on the neck of the container and on the pushbutton confront one another and prevent such action.

3,591,129
BALL-TYPE VALVE
Eldon E. Hulsey, P.O. Box 533, Conroe, Tex.
Filed Jan. 27, 1969, Ser. No. 794,234
Int. Cl. F16k *37/00*
U.S. Cl. 251—118 4 Claims

A valve for controlling fluid flow employing a ball-shaped closure member having a flow passage comprising an inlet

end portion circular in cross section merging into an outlet



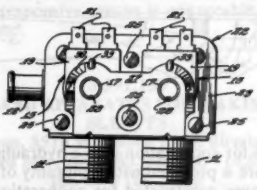
end portion defined by a laterally extending slot of generally triangular shape.

3,591,130

SHUTOFF VALVE AND SOLENOID COIL MOUNTING BRACKET THEREFOR

William R. McCarty, Skokie, Ill., assignor to Eaton Yale & Towne Inc.

Filed June 1, 1969, Ser. No. 821,050
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 9 Claims



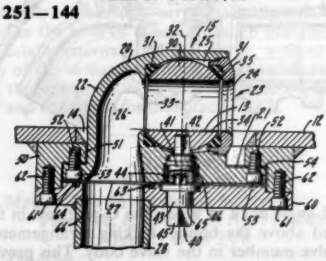
Snap-on metal frame for solenoid coils of solenoid-controlled mixing valve. The frame is generally C-shaped in form and its bottom leg is secured to the valve body and forms a cover for the valve body. Solenoid coils for the valves are mounted on the valve body for movement about the axes of the coils. Terminals from the coils extend from the coils and cover certain of the means securing the frame to the valve body, when the solenoid coils are in their operative positions. A top leg of the frame extends over the tops of the coils and has outwardly opening notches registering with lugs on the coils, for holding the terminals in their operative positions. During assembly of the valve, the coils and terminals are turned in the frame to afford access to the securing means, and the top leg of the frame engages the tops of the lugs on the coils. When the securing means have been tightened, the coils are then turned until the notches in the top leg snap into engagement with the lugs projecting upwardly from the coils.

3,591,131

RAILROAD TANK CAR BALL VALVE

Edwin S. Carlson, Chicago, Ill., assignor to Union Tank Car Company

Filed Aug. 1, 1966, Ser. No. 569,313
Int. Cl. F16k *5/06*
U.S. Cl. 251—144 7 Claims



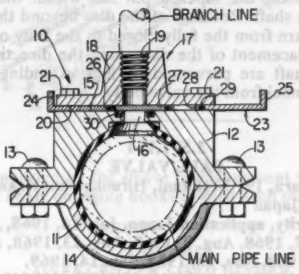
A railroad tank car has a ball valve operable from its underside mounted within the car tank in a manner that permits complete drainage.

3,591,132

COUPLING FITTING WITH SLIDING VALVE

Philip Johnston, Jenkintown, and Peter J. Hurt, Doylestown, both of, Pa., assignors to Lehigh Fluid Power, Inc., Easton, Pa.

Filed May 15, 1969, Ser. No. 824,787
Int. Cl. F16k *3/02*; F16l *41/00*
U.S. Cl. 251—146 11 Claims



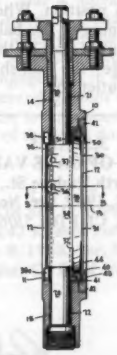
The pipeline fitting has two halves assembled about a main pipeline with one of the halves having an opening therethrough communicating with an opening in the pipeline. An outlet piece also has an opening aligned with the fitting opening with the opposed faces of the outlet piece and apertured fitting being flat and defining an elongated chamber within which is slidably mounted a flat slide. The flat slide is provided with an elliptical insert surrounded by an O-ring with an aperture through the insert to provide communication between the outlet piece and fitting openings in one position of the slide. The aligned openings are within the elliptical shaped O-ring during all positions of the slide.

3,591,133

BUTTERFLY VALVE

Michael E. Miles, Northborough, and James F. Donnelly, Worcester, both of, Mass., assignors to Jamesbury Corporation, Worcester, Mass.

Filed Aug. 23, 1968, Ser. No. 754,925
Int. Cl. F16k *13/02*
U.S. Cl. 251—173 2 Claims



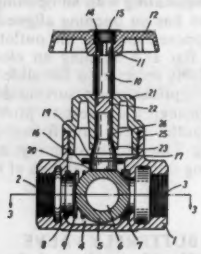
An improved butterfly valve of the type wherein a disc mounted for rotation about a nondiametric axis and having a continuously convergent circumferential sealing surface which cooperates with a wall-mounted annular flexible seat is disclosed. The inwardly projecting nature of the flexible seat subjects it to highly erosive forces when fluid is throttled between it and the disc when the disc is opened to a throttling position, i.e. approximately 15° from the closed position or greater. To protect the seat from such erosive forces, the rigid wall of the fluid flow channel is projected inwardly on both sides of the seat to provide a far more erosion-resistant surface for throttling operation. These same inward projec-

tions can also be employed to provide a scraping lip which will remove solids buildup from the sealing surface of the disc as it is rotated toward the seat. A manner of affixing the disc to the shaft without providing a leak path across the disc and whereby the forces imposed by fluid pressure upon the disc are transmitted directly to the shaft is also disclosed. This entails passing the shaft through a shaft bore in an integrally formed gudgeon in said disc and passing tapered pins parallel to the surfaces of the disc through the gudgeon and shaft in such a manner that a majority of, but not the entire circumference of, the tapered pin lies within the circumference of the shaft. Rotation of the disc beyond the desired one-quarter turn from the fully closed to the fully open position and displacement of the disc along the direction of the axis of the shaft are prevented by lugs extending into the fluid flow channel from the valve body.

3,591,134
BALL VALVE

Katsuji Fujiwara, 191 Neshitani, Hiraoka-cho, Kakogawa-shi, Hyogo ken, Japan

Claims priority, application Japan, July 14, 1968, July 18, 1968, Aug. 7, 1968, Aug. 9, 1968, Aug. 23, 1968, Aug. 30, 1968, Nov. 18, 1968, Jan. 14, 1969, 43/49486; 43/50804; 43/55914; 43/56848; 43/60604; 43/62615; 43/84297; 44/3652
Int. Cl. F16k *5/20*
U.S. Cl. 251—175 **6 Claims**

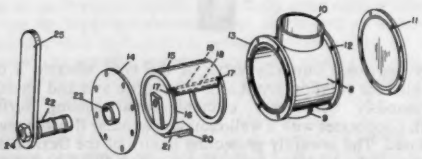


A ball valve having a valve body with inlet and outlet openings, a ball-shaped valve disposed within said body and having an opening extending therethrough, valve-operating means including a handle engaging the ball-shaped valve to rotate the ball from the open to closed positions. The ball-shaped valve which is freely movable within the housing has its opening aligned with the inlet and outlet openings when the valve is in the open position. When the valve is in the closed position, the opening in the ball-shaped body is substantially at 90° to the outlet port so that the pressure of the fluid from the inlet urges the ball-shaped valve against a cooperating seat at the outlet port.

3,591,135
FORM OF GATE VALVE

Oren E. Miller, 8126 North Hudson St., Portland, Oreg.

Filed Sept. 5, 1969, Ser. No. 855,683
Int. Cl. F16k *5/06*
U.S. Cl. 251—180 **4 Claims**

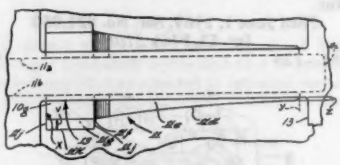


This invention consists of a cylindrical body having a tubular inlet and outlet extending outward from the longitudinal center thereof, the aforesaid inlet and outlet being diametrically opposite to one another; and a gate in the form of a curved plate being located in the said cylindrical body the curved plate having a spring guide ring at each end thereof; and at right angle to the plate each guide ring being split or cut, thereby providing the rings with two ends and crossbar having one end connected to each ring. There are two crossbars in parallel spaced relation to one another, the ends of the crossbars being connected to the ends of the rings and at right angle to the rings and directly under the aforesaid curved plate; and an L-shaped lever, having an inverted U-shaped clip, integrally formed at one end, the clip being adapted to encompass in part a portion of the two crossbars. The L-shaped lever is connected to a valve shaft that extends through the center of an end plate of the aforesaid cylindrical body, the valve shaft having a hand lever secured to the outer end thereof, for the purpose of opening or closing the valve.

3,591,136
ROTARY VALVE WITH CURVED VALVE SLOT

Arthur E. Bishop, 5516 Westwood Lane, Birmingham, Mich.

Filed Feb. 26, 1969, Ser. No. 802,359
Int. Cl. F16k *5/04*
U.S. Cl. 251—209 **11 Claims**

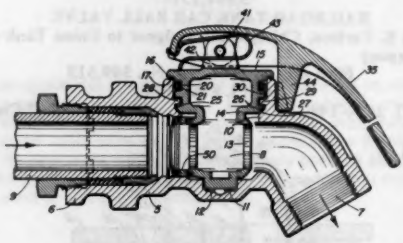


A valve core for cooperation with a hydraulic valve sleeve, wherein the core is provided with a plurality of longitudinally extending grooves constructed for cooperation with mating radially inwardly facing grooves in the valve sleeve, wherein the grooves are constructed by a rolling operation in a manner permitting almost limitless variations in exact valve-land contour. The invention deals with the valve core thus constructed and a preferred valve slot configuration, along with a novel method and apparatus for the construction thereof.

3,591,137
ANGLE COCKS

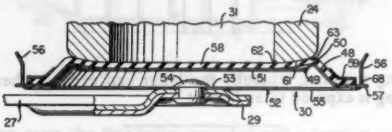
Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Chicago, Ill.

Filed June 4, 1969, Ser. No. 830,354
Int. Cl. F16k *35/12, 5/06, 51/00*
U.S. Cl. 251—315 **7 Claims**



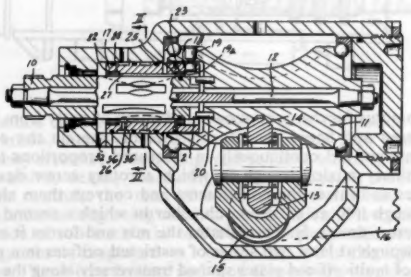
A railroad angle cock in which the O-ring seal in the bonnet is located above the bonnet locking arrangement which holds the valve member in the valve body. This prevents ice and dirt or corrosive car lading from seeping into the valve and interfering with the operation of the angle cock.

3,591,138
HEAT MOTOR SAFETY VALVE CONSTRUCTION AND PARTS THEREFOR
Denis G. Wolfe, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 688,922, Dec. 7, 1967, Pat. No. 3,498,730. Filed Dec. 29, 1969, Ser. No. 871,097
Int. Cl. F16k *25/00*
U.S. Cl. 251—333 6 Claims



This disclosure relates to a heat-motor-operated valve means which is only adapted to open the valve means when the heat motor is actuated and a condition-responsive means is sensing a certain flame at a pilot burner means that will ignite fuel passing through the subsequently opened valve means to a main burner means, the valve member of the valve means being carried on one end of a bimetallic lever means that carries the heat motor thereon and against which the condition-responsive means is engageable when sensing the certain flame.

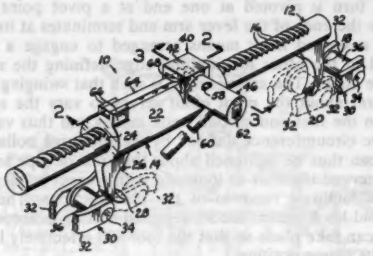
3,591,139
METHOD AND APPARATUS FOR MAKING VALVE SLEEVES
Arthur E. Bishop, 5516 Westwood Lane, Birmingham, Mich.
Filed Mar. 20, 1968, Ser. No. 714,509
Int. Cl. F16k *27/00*
U.S. Cl. 251—367 2 Claims



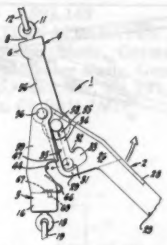
A sleeve for hydraulic flow control wherein a plurality of longitudinally extending, peripherally spaced grooves are provided in the bore of the sleeve, such that the grooves terminate axially internally of the sleeve, without providing a plurality of sleeve components. The invention relates specifically to the one-piece valve thus constructed, and the novel method and apparatus for manufacturing it.

3,591,140
CHAIN TOOL
John C. McCoy, Box 561, Ruidoso, N. Mex.
Filed Feb. 6, 1969, Ser. No. 797,205
Int. Cl. B66f *3/08*
U.S. Cl. 254—66 1 Claim

A chain holding and tightening tool comprising a rack having a chain-engaging hook at one end and a sleeve slidably surrounding the rack and provided with a hook for engaging an oppositely disposed end portion of the chain. Ratchet means, supported by the sleeve in engagement with the rack, moves the chain engaging hooks toward each other.



3,591,141
OVERCENTER LOAD BINDER
Ralph A. Ratcliff, 614 Mountain View Ave. P.O. Box 543, Belmont, Calif.
Filed July 14, 1969, Ser. No. 841,326
Int. Cl. B66f *3/00*
U.S. Cl. 254—78 16 Claims



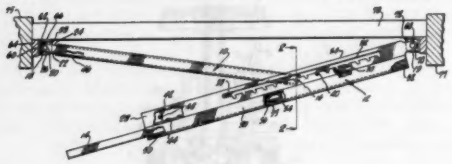
An overcenter-type load binder, having improved self-locking safety characteristics, defined by an operating lever having a clevis configuration at one end, a pivoted yoke mounted at such end, and a movable shank mounted inwardly of such end. Generally L-shaped slots are formed in the clevis arms of the lever and the shank is provided with projecting pins which extend through and beyond the confines of the slots for engagement in self-locking recesses provided in the yoke. Interengagement of the pins and recesses during movement of the lever toward a load unbinding position prevents "flying" of the lever during such unbinding.

3,591,142
TOOLS FOR SPLIT PIPE COLLARS
Frank Lynn Hatcher, 147 Rhame Terrace, Santa Paula, Calif.
Filed July 9, 1968, Ser. No. 743,557
Int. Cl. B66f *3/00*
U.S. Cl. 254—79 1 Claim

Tools are provided for changing the effective circumference of a split pipe defining a collar for connecting the

ends of pipe sections. Each tool includes a lever arm terminating at one end in a handle and at its other end in a first hook means arranged to engage a flange secured adjacent to one edge of the split portion of the pipe collar. A shaft structure in turn is pivoted at one end at a pivot point intermediate the ends of the lever arm and terminates at its other end in a second hook means arranged to engage a flange secured to the other longitudinal edge defining the split in the pipe collar. The arrangement is such that swinging of the lever arm about the pivot point serves to vary the spacing between the first and second hook means and thus vary the effective circumference defined by the split pipe collar. The collar can thus be tightened about the ends of pipe sections to be secured together or loosened with respect to these sections to facilitate removal of the pipe sections. The pivot point and hook means are so designed that an overcentering action can take place so that the tool will effectively lock itself to its swung position.

3,591,143
DOOR OPENER
William A. Boller, 1300 Milan Ave., South Pasadena, Calif.
Filed Mar. 21, 1969, Ser. No. 809,206
Int. Cl. B66f *3/00*
U.S. Cl. 254—119 **3 Claims**

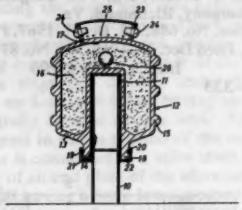


A door opener utilizes the force developed by leverage on the jamb or frame of a door proximate its lockset to slip the door's latch out of its catch to enable the door to be pushed open. The door opener has a lever arm which is load coupled to a fulcrum arm and an extension arm for the application of the opening force. The extension arm is extensible from the lever arm to develop a mechanical advantage. The fulcrum arm's load coupling to the lever arm is at any of a number of longitudinal positions along the lever arm to accommodate different door widths while optimizing the mechanical advantage available with the device. Load transmitting members are eccentrically mounted at the ends of the lever arm and fulcrum arm to provide bearing for the transmission of a door opening load to the door jambs and adjustment for door width.

An alternate embodiment provides a door opener with a pair of load transmitting members to bear against opposite door jambs coupled together through a gear sector and a rack. Rotation of a handle secured to the gear sector produces movement of the load transmitting members against the door jambs for freeing the door's latch from its catch.

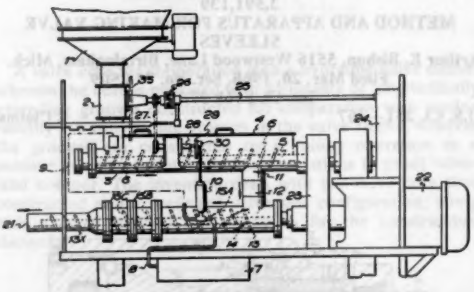
3,591,144
SHOCK-ABSORBING COVERINGS
Stig Bertil Iving, Limhamnsvagen 18A, 217 59, Malmo, Sweden
Filed Feb. 9, 1970, Ser. No. 9,522
Claims priority, application Sweden, Feb. 10, 1970, 1749/69
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **6 Claims**

A covering for objects that are exposed to impacts, such as road and bridge parapets, guiding curbs, motorcar bumpers, central reserve guard rails for expressways etc. The covering comprises a jacket of resilient material with a hollow space therein in which a damping material, preferably sand, is enclosed. The hollow space has a volume greater than the



damping material, whereby the latter can expand when the covering is exposed to an impact.

3,591,145
METHOD FOR CONTINUOUSLY MIXING POWDERS AND OILS
Donald Ainsworth, and Trevor Blewett, both of Morley, England, assignors to Vallance & Co. (Morley) Limited, Morley, England
Continuation-in-part of application Ser. No. 743,209, July 8, 1968, now Patent No. 3,536,300. This application Mar. 24, 1970, Ser. No. 22,187
Int. Cl. B01f *7/08*
U.S. Cl. 259—6 **3 Claims**

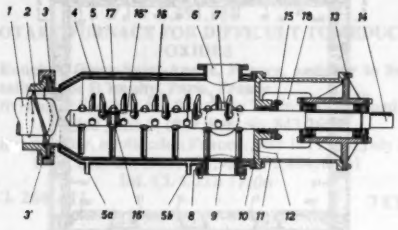


Apparatus for the continuous production of putty from the powdered and liquid constituents thereof wherein the constituents are fed continuously in measured proportions to a preliminary mixing trough in which a rotary screw device agitates and mixes the constituents and conveys them along the trough into an extrusion chamber in which a second rotary screw device further agitates the mix and forces it serially through at least two series of restricted orifices in a plurality of multiorificed plates spaced transversely along the extrusion chamber and thence through a delivery outlet as a continuous flow, said second rotary screw device preferably cooperating with one or more of said extrusion plates and with longitudinally extending projections and recess of the inner wall of said extrusion chamber to exert also a shearing action on the mix.

3,591,146
DEVICE FOR ATTACHMENT TO MIXING AND KNEADING MACHINES
Fritz Sutter, Pratteln, Switzerland, assignor to Buss Aktiengesellschaft, Basel, Switzerland
Filed June 19, 1968, Ser. No. 738,322
Claims priority, application Switzerland, June 22, 1967, 9123/67
Int. Cl. B01f *7/04*, *15/00*
U.S. Cl. 259—10 **4 Claims**

An attachment device for a mixing and kneading machine having a rotating wormshaft comprises a casing which is

adapted to be attached coaxially on the casing of the mixing and kneading machine and a separate and independently driven rotatable shaft with radially arranged blades therein and a first bearing. The attachment device casing is divided



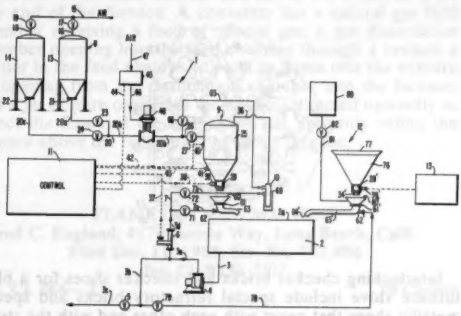
into two parts, the first being provided with a heating or cooling jacket and an outlet for the emergence of the mixture and the second including the first bearing and a second bearing for the shaft and means for adjusting the blades.

3,591,147

AUTOMATED METHOD AND APPARATUS FOR MIXING MUD FOR USE IN WELL OPERATIONS

Terry O. Anderson, and Darryl W. Rogers, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 30, 1968, Ser. No. 771,954
Int. Cl. B28c *7/04*
U.S. Cl. 259—154 **22 Claims**



Method and apparatus for mixing mud for use in well operations, including independently operable high and low capacity systems for supplying mud solids to a mixing tank. A radioactive, density measuring control system is employed which controls the rate of solids supply, with the same calibration setting being maintained for high and low rates of addition of solids material to the mud. A pneumatic conveying system is employed to convey the solids through the system. Vane-type feeders and mud shrouds are employed to minimize the dust level during the mud mixing operation.

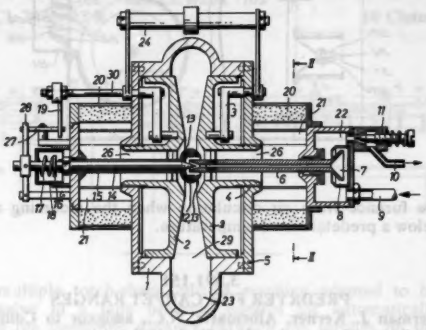
3,591,148

CARBURETOR

Hugo Schmitz, Neubeckumerstrasse 102, 472 Beckum, Germany

Filed Dec. 18, 1969, Ser. No. 859,125
Claims priority, application Germany, Sept. 28, 1968, June 21, 1969, P 17 76 156.7; P 19 31 642.8
Int. Cl. F02m *9/10*
U.S. Cl. 261—29 **15 Claims**

A carburetor for motor vehicle internal combustion engines in which an annular atomizing chamber is formed between two axially aligned circular walls which are axially slidable relatively to each other to vary the size of the atomizing chamber so that no individual throttle valve for the fuel mixture is required. The air for atomizing the fuel is conducted into the annular atomizing chamber by two axially aligned tubular conduits leading from opposite sides through the center portion of the circular walls where a spherical body is fixedly arranged and in whose hollow interior extends a needle-valve controlled fuel admitting tube, while fuel outlet apertures in the sphere discharge the fuel into the



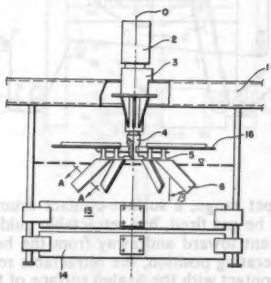
airstream which is caused to flow from the tubular conduits into the annular atomizing chamber through a short and narrow and adjustable passage formed between the surface of the sphere and the adjustable circular walls.

3,591,149

AERATION APPARATUS

Herbert Auler, Michelbacher Hutte, Germany, assignor to Passavant Werke, Michelbacher Hutte, Germany

Filed Jan. 16, 1969, Ser. No. 791,557
Int. Cl. B01f *7/18*
U.S. Cl. 261—91 **24 Claims**



Apparatus for introducing a gas into a liquid by rotating about a vertical shaft a set of long, narrow blades, which extend downwardly and outwardly into the liquid in a radial direction, and which blades are inclined relative to a vertical radial plane passing through the blades. Air is drawn into the liquid on the rear side of the blades and liquid is caused to flow upwardly across the blades.

3,591,150

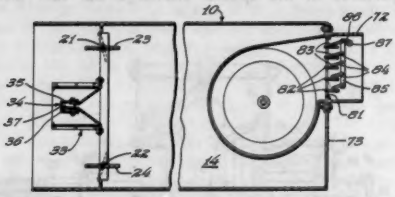
GAS FURNACE

Richard Weatherston, St. Paul, Minn., assignor to Weather-Rite, Inc., Ramsey, Minn.

Filed Jan. 15, 1969, Ser. No. 791,883
Int. Cl. F23l *9/04;* **F24h** *3/04*
U.S. Cl. 263—19A **15 Claims**

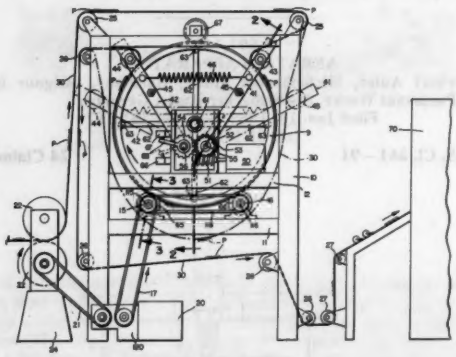
A gas furnace capable of maintaining a constant pressure differential across a burner unit irrespective of changes in the flow of air through the furnace by the use of a controlled bypass damper adjacent the burner unit. Additional features includes controlling the volume of air at the discharge end of the furnace, thus, affording improved fan efficiency, a capa-

bility to circulate air through the furnace without heating when no heat is required, and a circuit designed to protect



the furnace from air circulation when the incoming air is below a predetermined temperature.

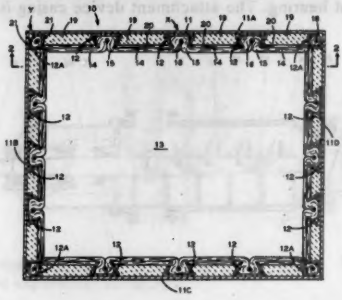
3,591,151
PREDRYER FOR CARPET RANGES
Herman J. Kerner, Albemarle, N.C., assignor to Collins & Aikman Corporation, New York, N.Y.
Filed Nov. 12, 1969, Ser. No. 876,003
Int. Cl. F27b *7/08, 7/20*
U.S. Cl. 263—34 **8 Claims**



In a carpet range, a surface-contact drum-type predryer, which may be gas fired, has retractable guide rolls mounted for movement toward and away from the heated drum surface. In operating position, the retractable rolls maintain the carpet in contact with the heated surface of the drum. When the carpet range is shut down, the retractable rolls move to their retracted position and maintain the carpet out of contact with the heated drum surface. Automatic control means are provided, responsive to energization of the main drive means, for causing movement of the retractable rolls toward the heated drum surface, and responsive to the deenergization of the main drive means for automatically moving the guide rolls away from the drum surface. The predryer may also be used for other webs.

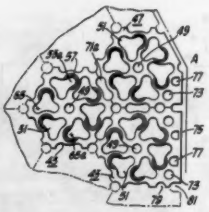
3,591,152
FURNACE INSULATION SUPPORT SYSTEM
Bonnie E. Mills, Jr., North Augusta, S.C., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,856
Int. Cl. F23m *5/00*
U.S. Cl. 263—46 **7 Claims**

A furnace lining anchoring and support system in which flexible ceramic fiber insulating blankets, exposed to the furnace atmosphere, are anchored in place by a plurality of elongated hollow retainers positioned about the furnace interior and behind the blankets. The retainers each have a longitudinal slot through which portions of the blankets, together with additional insulation packing, are stuffed into the hollow part of the retainer for capture therein to securely



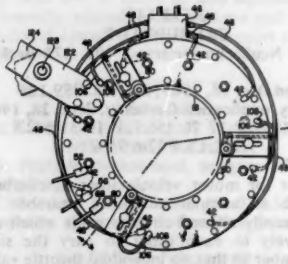
anchor the blankets and thermally shield the retainers from furnace radiant heat.

3,591,153
INTERLOCKING CHECKER BRICKS AND CHECKER SHOES FOR A BLAST FURNACE STOVE
Russell A. Powell, and Henry Z. Schofield, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.
Filed Jan. 19, 1970, Ser. No. 3,768
Int. Cl. F23l *15/02*
U.S. Cl. 263—51 **13 Claims**



Interlocking checker bricks and checker shoes for a blast furnace stove include special refractory bricks and special metallic shoes that coact with each other and with the structure of the stove to form a unitary checker mass within the stove.

3,591,154
FLAME HARDENER
Ingwald L. Ramberg; John L. Benn, and Fritz Schreder, all of King County, Wash., assignors to Ingwald L. Ramberg, Seattle, Wash.
Filed Mar. 12, 1969, Ser. No. 806,660
Int. Cl. C21d *1/66*
U.S. Cl. 266—4 **3 Claims**



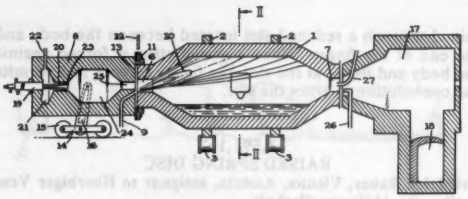
A torch-ring-type flame hardener is provided in a plurality of annular plates which are cooperatively milled such that

inner unobstructed annular gas and quench water outlets are provided when the plates are assembled. The flame hardener may be mounted to encircle a cylindrical object and to guidingly seat on the object as the object is axially rotated.

3,591,155
ROTARY FURNACE FOR DIFFICULT TO REDUCE OXIDES

Jean Bouchet, Clery-Saint-Andre, France, assignor to Societe Metallurgique D'Imphy, Paris, France

Division of Ser. No. 454,079, May 7, 1965, abandoned.
Filed June 3, 1969, Ser. No. 843,265
Claims priority, application France, July 16, 1964, July 21, 1964, Feb. 25, 1965, 981,930, 982,484, 6,961
Int. Cl. C21b *11/06*
U.S. Cl. 266—11 **7 Claims**

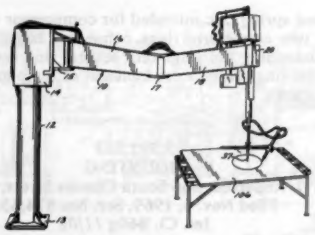


A horizontal rotary furnace open at each end is used for reduction of metallic oxides. The fumes are removed from one end of the furnace. A converter has a natural gas feed chamber receiving a feed of natural gas; a gas dissociation chamber opening into the feed chamber through a venturi; a burner in the feed chamber directs its flame into the venturi; an opening from the dissociation chamber into the furnace; and a jet of pure oxygen in the opening directed upwardly to direct the flame of the dissociated gas upwardly within the furnace above the reducing zone in the furnace.

3,591,156
FLAME CUTTING MACHINE

Alfred C. England, 4170 Jaunta Way, Long Beach, Calif.

Filed Dec. 11, 1968, Ser. No. 782,986
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 **10 Claims**

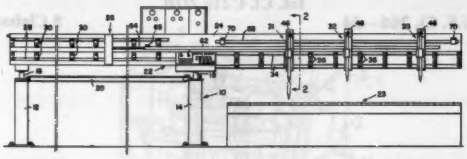


The flame cutting machine illustration in the drawing is suitable for cutting along straight or curved lines or circles. It includes three assemblies which are mounted upon an articulated frame. A first assembly includes a torch and a pair of concentrically arranged gas conduits for supplying cutting gas to the torch. The conduits rotate on a common axis and are provided with swivel inlet fittings for gas on that same axis. These elements are mounted within a housing and a drive means is included for rotating them within the housing. The housing is mounted for movement relative to the frame in the direction of the common axis of the conduits and it is moved relatively to the frame by a motor drive drivescrew and follower nut assembly.

3,591,157
SHAPE CUTTING MACHINE

John E. Culp, Jr., Allentown, and Howard E. Schwartz, Emmaus, both of, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 5, 1969, Ser. No. 796,844
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 R **10 Claims**

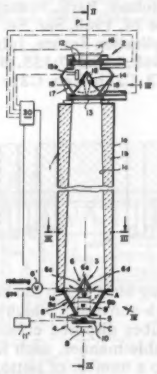


A multiple torch-shape cutting machine adapted to be responsive to a tape program control for automatically setting the centerline distance between the torches on the machine. Means are provided for positioning the torches relative to one another by engaging or disengaging the individual torch support with a moveable arm adapted to be moved by the program control.

3,591,158
SHAFT FURNACE

Heinz-Deiter Pantke, Essen-Frintrop; Ulrich Pohl, Oberhausen-Osterfeld, and Hermann Trecker, Kirchhellen, all of, Germany, assignors to Huttenwerk Oberhausen AG, Oberhausen, Germany

Filed June 17, 1969, Ser. No. 834,065
Claims priority, application Germany, July 10, 1968, P 17 58 638.8
Int. Cl. C21b *7/00*
U.S. Cl. 266—25 **7 Claims**

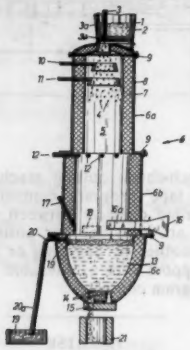


A shaft furnace for the gas reduction of metallurgical ores which provides a gas-distributing body centrally of the furnace chamber at the bottom of the furnace column, a support plate below a downwardly converging funnel, the outlet of which has a width corresponding to the gas-distributing element, members for shifting the charge along the support table out of the furnace, and a furnace-charging arrangement having a pair of sliding-plate gas gates or locks between which an intermediate charge-receiving arrangement is provided to restrict the free-fall height of the charge. The gas-distributing element is a roof- or coping-shaped body which is open downwardly and is supplied with reducing gas from one or both ends.

3,591,159
APPARATUS FOR PRODUCING STEEL FROM PIG IRON IN CONTINUOUS PROCESS

Theodor Messing, Mulheim, and Werner Coupette, Wattenscheid-Eppendorf, both of, Germany, assignors to Standard-Messo Duisburg Gesellschaft fur Chemietechnik mit beschrankter Haftung & Co., Duisburg, Germany

Filed June 14, 1968, Ser. No. 737,196
Claims priority, application Germany, June 19, 1967, P 15 33 949.8
Int. Cl. C21c 7/10
U.S. Cl. 266—34 8 Claims

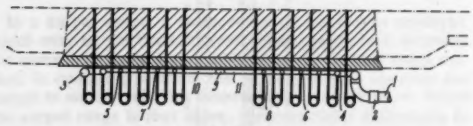


A method of and apparatus for the continuous production of steel from pig iron according to which in a continuous operation pig iron is introduced into evacuated gas extraction chamber means divided up into fine droplets which latter are subjected to the action of oxygen.

3,591,160
BLAST DEVICE FOR STEEL CONVERTER

Pierre Leroy, St. Germain En Laye, and Emile Sprunck, Moyeuvre Grande, both of, France, assignors to Compagnie Des Ateliers Et Forges De La Loire, St. Chamond, Firminy, St Etienne, Jacob Holtzer, Paris, France

Filed June 24, 1968, Ser. No. 739,553
Claims priority, application France, July 5, 1967, June 17, 1968, 113.157;155.193
Int. Cl. C21b 7/16; C21c 5/48
U.S. Cl. 266—41 5 Claims



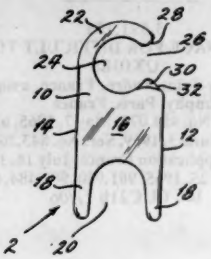
Device for supplying blast gas to the blowing orifices of the bottom of a steelwork converter, which comprises a plurality of header-forming tubes disposed either as concentric tores or in any other suitable manner, each header being adapted to supply blast gas to a number of bottom orifices, for example a row thereof, with self-stopping means for easily putting each tuyere out of service in case of abnormally rapid wear thereof. Small diameter pipes, formed to have flexibility to facilitate assembly and disassembly are used for the connection of the supply header tubes to the bottom orifices.

3,591,161
SPRING SPACER

William A. Scheublein, Jr., Ballwin, and Louis P. Fister, St. Louis, both of, Mo., assignors to Moog Industries, Inc., St. Louis, Mo.

Filed Apr. 25, 1969, Ser. No. 819,132
Int. Cl. F16f 1/12
U.S. Cl. 267—61 3 Claims

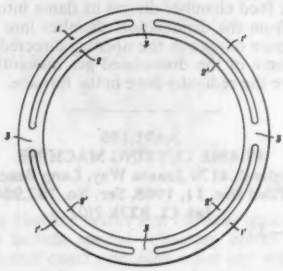
A spacer for expanding coil springs has a body provided with grooves at each end. One of the grooves freely accepts a convolution of the spring, while the other groove has a finger curved over it for capturing an adjacent spring convolution therein so that the spacer follows the movement of the adjacent convolution. Entrance to the second groove is obtained through a reduced slot located between the body and the end of the finger. When a convolution is forced against the body and finger at the slot, the finger spreads and permits the convolution to enter the slot.



3,591,162
RAISED SPRING DISC

Friedrich Bauer, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft

Filed July 1, 1969, Ser. No. 838,241
Claims priority, application Austria, July 12, 1968, 10 A 6746/68
Int. Cl. F16f 1/34
U.S. Cl. 267—161 4 Claims

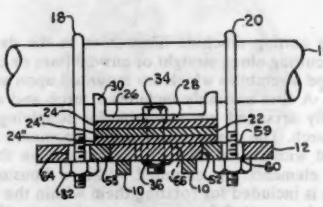


A raised spring disc intended for compressor valves having at least two concentric rings connected together by radial webs subdividing the rings into several ring sections. All or part of the ring sections are bent out of the plane of the disc to form waves.

3,591,163
MOUNTING

Richard D. Anderson, 866 South Charles Street, Elgin, Ill.

Filed Nov. 6, 1969, Ser. No. 874,631
Int. Cl. B60g 11/02
U.S. Cl. 267—52 5 Claims



A mounting construction illustrated as used on a vehicle traction bar includes a rigid plate for mounting articles in

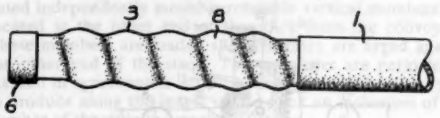
situations requiring a variety of dimensions between mounting bolts. A plurality of tapered apertures are formed in the plate and plugged with the tapered scrap pieces from which they were formed. Each scrap piece is provided with a notch or aperture to receive a bolt, and each of the scrap piece plugs may be selectively oriented in its aperture to provide for a varied spacing between the bolt-receiving apertures.

3,591,164

HIGH-HYSTERESIS SHOCK ABSORBER

Glen M. Jamieson, Blair Athol, South Australia, Australia, assignor to The Commonwealth of Australia, Parkes, Australia

Filed Apr. 29, 1968, Ser. No. 725,042
Claims priority, application Australia, May 1, 1967, 21084/67
Int. Cl. F16f 1/44
U.S. Cl. 267—140 **6 Claims**



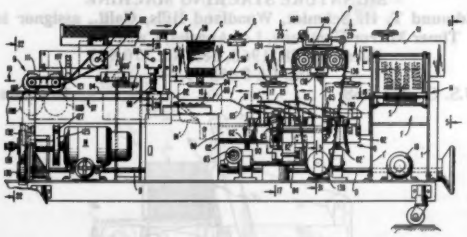
A shock absorber comprising an elastomeric tube disposed over a movable member in such a manner that frictional engagement of the elastomeric tube with the member on which it is disposed, together with inherent resistance of the elastomeric tube results in a damping action on the movable member.

3,591,165

METHOD AND APPARATUS FOR HANDLING SHEET MATERIAL, SIGNATURES AND THE LIKE

John O. McCahon, West Simsbury, Conn., and William J. Byrne, Pearl River, N.Y., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Feb. 20, 1968, Ser. No. 706,926
Int. Cl. B65h 39/02
U.S. Cl. 270—54 **46 Claims**



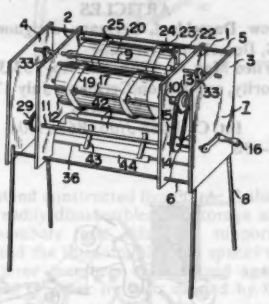
Apparatus for feeding signatures from a stack thereof in gathered predetermined sequence to a book-sewing machine or the like, comprising means for transferring signatures one at a time from a feed hopper by rotary grippers and feed rollers to linearly traveling grippers, suction and lap-engaging means for opening signatures suspended from the traveling grippers, and means for rotating the suspended, opened signatures through 180° and depositing the same on a pusher-type saddle conveyor for movement thereby through fold-conditioning means and for delivery to the sewing saddle of a book sewer or the like, including operational programming means for the feeding and sewing apparatuses and means for detecting improper functioning thereof.

3,591,166

OSCILATING CLOTH FOLDER HAVING MOVABLE CLOTH HANGER

Takeshi Ebisu, 39 Murasakino Sekiryu-cho Kita-ku, Kyoto-shi, Japan

Filed Oct. 17, 1968, Ser. No. 768,340
Claims priority, application Japan, Oct. 26, 1967, 42/68,953
Int. Cl. B65h 45/20
U.S. Cl. 270—79 **12 Claims**



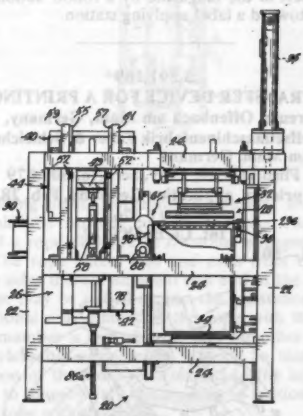
This invention relates to a cloth folding machine comprising a means for feeding beltlike sheets of cloth downward, a guide means for horizontally oscillating the cloth by interlocking with the cloth feeding means, a cloth holding means for pressing the cloth to a hanging means thereof, whereby the rolled beltlike sheet of cloth is uncoiled to be again folded in an alternate direction and the resultant foldings are suspended alternately on the right and left sides of the cloth hanging means.

3,591,167

SHEET FEEDING APPARATUS

Stanley R. Norbutas, Glenview, Ill., assignor to Signode Corporation

Filed Feb. 27, 1969, Ser. No. 802,928
Int. Cl. B65h 5/02, 5/08
U.S. Cl. 271—9 **27 Claims**



Apparatus usable in connection with brick stacking and strapping apparatus for placing course-separating sheets, such as paper, upon a course of bricks, and for placing course-supporting sheets, such as veneer upon a course of bricks. The feeder includes a hopper means for storing a stack of separating sheets and a stack of supporting sheets, with a first mechanism being provided for shifting a separating sheet from the hopper means toward a course of bricks, and with a second mechanism being provided for shifting a

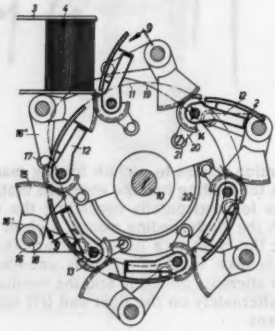
supporting sheet toward a course of bricks. A single transfer means is provided for moving the shifted sheets from the hopper means to a brick stacking station, and the hopper means is mounted for movement adjacent the transfer means to position sheet outlet openings in the hopper means in discharging relationship with respect to the transfer means.

3,591,168

APPARATUS FOR LABELING BOTTLES AND SIMILAR ARTICLES

Rudolf Zodrow, Dusseldorf, Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Germany

Filed May 31, 1968, Ser. No. 733,376
Claims priority, application Germany, July 17, 1967, J 29 010 VIIb/81b
Int. Cl. B65h 3/06; B65c 9/08
U.S. Cl. 271—36 **3 Claims**



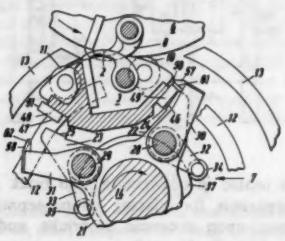
Apparatus for labeling bottles and similar articles including a revolving carrier having a plurality of label withdrawing segments arranged in a circular series and mounted for controlled swinging movement into and out of a path of uniform rotation at a label withdrawal station adjacent a stationary label magazine to successively withdraw the end label from a stack of labels in the magazine by a rolloff action and carry such labels toward a label applying station.

3,591,169

SHEET TRANSFER DEVICE FOR A PRINTING PRESS

Friedrich Preuss, Offenbach am Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher A G, Offenbach am Main, Germany

Filed Feb. 20, 1969, Ser. No. 800,879
Claims priority, application Germany, Feb. 28, 1968, P 16 11 376.1
Int. Cl. B65h 9/12
U.S. Cl. 271—50 **4 Claims**



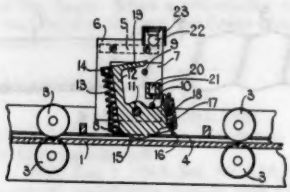
A device for delivering sheets to a printing unit of a printing press, transfers sheets to a transfer drum of the press by means of a gripper carrier movably mounted on an endless chain conveyor. The carrier is accurately locked in its transfer position with reference to the drum by a leading clamp and a trailing clamp. Such accurate positioning of the carrier is effected by activating the leading clamp prior to the carrier reaching its transfer position thereby limiting further movement of the carrier. The accurate positioning of the carrier is further assured by the engagement of mating surfaces on the carrier and the drum.

3,591,170

ERROR-INDICATING DEVICES

Kenneth William Doughty, Stanford, Biggleswade, and Cyril Winstanley, St. Albans, both of, England, assignors to International Computers Limited, London, England

Filed Mar. 12, 1969, Ser. No. 806,569
Claims priority, application Great Britain, Mar. 22, 1968, 13,953/68
Int. Cl. B65h 7/06
U.S. Cl. 271—57 **3 Claims**



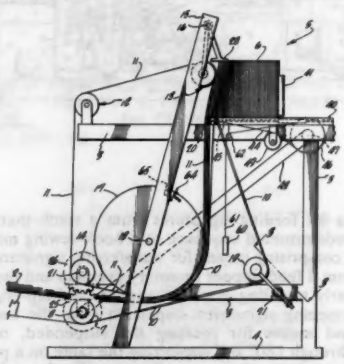
A device is disclosed for detecting the presence of overlapping documents in a document feed. The device includes a member rotatable about a pivot and having a surface which, in the unoperated position, is spaced from the feed bed by a distance of approximately 1½ times the thickness of the documents being fed. The surface is formed so that on rotation of the member from its unoperated position the spacing between the surface and the feed bed remains constant or slightly decreases. Documents in overlapped relationship will therefore rotate the member which in turn may interrupt a light beam and stop the document feed. The member may also carry a marking device to mark the overlapped document for subsequent identification.

3,591,171

SIGNATURE STACKING MACHINE

Edmund T. H. Schmidt, Woodland Hills, Calif., assignor to Timer Mirror Company, Los Angeles, Calif.

Filed Oct. 28, 1968, Ser. No. 770,987
Int. Cl. B65h 29/14
U.S. Cl. 271—68 **16 Claims**



A receiver is adapted to support an aligned stack of signatures. First and second adjacent conveyors are adapted to

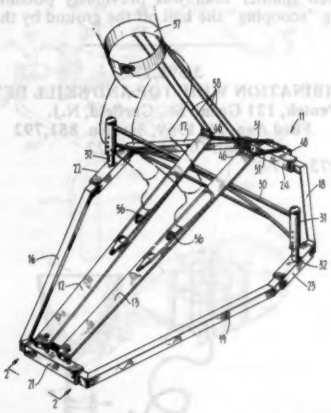
transport between them a stream of signatures moving edgewise such that the stream approaches one end of the stack in a direction transverse to its length. A stop is disposed along the backside of the stack transverse to the stream. The conveyors are bowed in cross section toward the stack at a point short of the front side of the stack so the signatures are stiffened before they reach the stack. The conveyors are partially wrapped around a direction changing rotatable drum the radius of which is the same order of magnitude or larger than the length of a signature. The outer conveyor wrapped around the drum is an endless belt arrangement mounted on three rotatable supports. The two supports between which the belt arrangement is wrapped around the drum are translationally fixed and the remaining support is movable transverse to its axis of rotation to permit the length of belt between the first two supports to change responsive to changes in the thickness of the sheets. One of the conveyors extends across the end of the stack and stops short of the backside of the stack so the second conveyor gradually moves out of contact with each sheet in turn as it moves into alignment in the stack. The receiver is a horizontal platform on which the stack lies in horizontal alignment. Two elongated independently movable rotatable vertical members are located at the other end of the stack from the conveyors. These members are loaded such that they are urged against the other end of the stack. The signatures are periodically marked in synchronism with the movement of the conveyors to produce along the length of the stack an indication of the number of sheets in the stack.

3,591,172

SPRING BIASED SKI EXERCISE MOUNTED ON ADJUSTABLE INCLINED SLOPE

Franz Hude, R. Kattnigstr. Villach 9500, Karnten, Austria

Filed Oct. 3, 1968, Ser. No. 764,828
Int. Cl. A63b *21/00, 23/02, 69/18*
U.S. Cl. 272—57 **10 Claims**



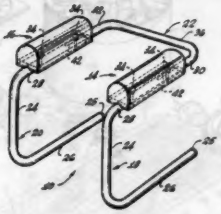
A snow ski exercising and training apparatus including a base upon which is mounted a pair of elongated ski simulating members, the forward ends of which are pivotally secured to the base so that the ski members can be pivotally moved transversely of the base about axes at their forward ends. Adjacent their rear ends, the skis are supported by a transversely extending slide bar for the transverse movement. A spring couples the skis together adjacent the forward ends to urge the same rotatably outward with respect to one another about their longitudinal axes, and tension springs couple each of the ski members to the base to provide resilient resistance to the transverse movement. A waistband is provided for the user and tension springs are used for attaching the waistband to the rearwardly ends of the ski members.

3,591,173

HEAD STAND SUPPORT

Eli Joseph Cossman, 12502 Milbank St., Studio City, Calif.

Filed Jan. 12, 1970, Ser. No. 2,007
Int. Cl. A63b *23/02*
U.S. Cl. 272—60 **9 Claims**



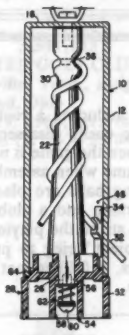
An exercise stand constructed from three C-shaped tubular members and readily disassembled for storage and shipping. Two of the members form sides and support a pair of shoulder pads and the third couples and spaces the two side members, the three members being keyed against relative rotation and held together by bolts carried by the shoulder pads.

3,591,174

FRICTIONAL RESISTANCE TYPE EXERCISING DEVICE

Ira J. Silberman, Opelika; Ralph Edwin Wilgus, Jr., Auburn, Ala., and George M. Hopkins, Atlanta, Ga., assignors to Diversified Products Corporation, Opelika, Ala.

Filed Dec. 20, 1968, Ser. No. 785,870
Int. Cl. A63b *21/00*
U.S. Cl. 272—79 **6 Claims**



An exercising device including a housing, a shaft positioned within the housing and having one end attached thereto, and a rope disposed in frictional engagement about the shaft. The rope enters into and exits from the housing through the sides thereof adjacent one end of the housing so that the rope may be pulled against the resistance produced by the frictional engagement of the rope with the shaft. A plastic dial member is rotatably fixed to the other end of the shaft and releasably engages the housing so that the rotational position of the shaft with respect to the housing may be adjusted to thereby vary the amount of frictional engagement of the rope with the shaft.

3,591,175

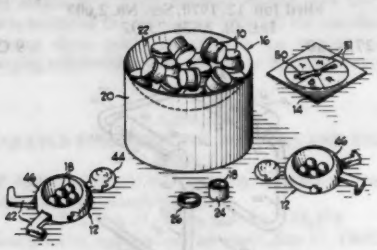
GAME

Marvin I. Glass, and Jeffrey D. Breslow, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 29, 1969, Ser. No. 794,912
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **6 Claims**

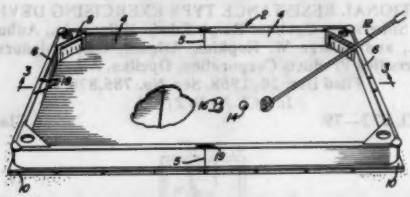
Game apparatus for a race-type chance game comprising a large number of containers, each enclosing a simulated

colored pill and having a cap for normally closing the container and concealing the pill color. The closed containers



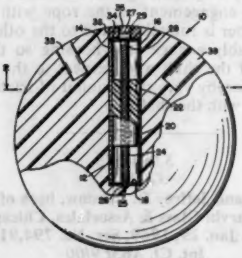
are randomly disposed in a central bowl and the players compete to find all of the pills of a given color by sequentially opening and closing the containers.

3,591,176
POOL-GOLF GAME APPARATUS
Leon A. Roth, 1895 Southwest 3rd Ave., Miami, Fla.
Filed Oct. 29, 1968, Ser. No. 771,422
Int. Cl. A63g *31/00*; A63d *15/00*, *15/06*
U.S. Cl. 273—6 **9 Claims**



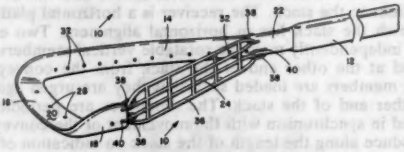
A game apparatus including a rectangular barrier frame, sections of which are easily disassembled for allowing the frame to be folded when the game is not in use. The four corners of the barrier frame when assembled include removable target pockets. Playing balls are placed within the interior area of the barrier frame and a club in the form of a golf putter is employed to strike the playing balls in a preselected direction with the object being to propel the playing balls into the target pockets. A folding mat or pad may be used as a playing base surface.

3,591,177
BOWLING BALL INCLUDING ADJUSTABLE BALANCING WEIGHT
Samuel Joseph Skuse, 1382 Culver Road, Rochester, N.Y.
Filed July 17, 1969, Ser. No. 842,559
Int. Cl. A63b *43/04*, *65/06*
U.S. Cl. 273—63 **9 Claims**



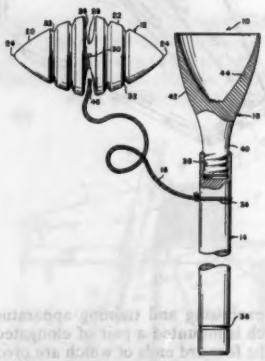
A cylindrical weight made of plastic material is axially adjustable in a blind bore that extends radially into a bowling ball substantially centrally of the portion of the ball into which the fingerholes are to be drilled. The outer end of the bore is closed by a plastic plug. A screw is threaded through the weight and journaled at opposite ends in the bore. To adjust the weight, a screwdriver may be inserted through a hole in the plug to rotate the screw.

3,591,178
LACROSSE RACQUET WITH PLASTIC GUARD PANEL
Franklin Milligan, 116 Kent St., Whitby, Ontario, and Daniel R. Kocho, 40 Willcroft St., Oshawa, Ontario, both of, Canada
Filed Oct. 1, 1968, Ser. No. 764,117
Int. Cl. A63b *65/12*
U.S. Cl. 273—96 **2 Claims**



A lacrosse racquet is formed with a unipartite and generally planar guard panel usefully formed as a moulded lattice structure from a suitable plastics material for interconnecting the toe and spine portions of the racquet frame. Such a guard panel avoids the problems due to sagging and bowing of woven guard structures and facilitates stringing. By forming the principal frame as a unitary moulded structure from a suitable plastic material, the lip portion of the racquet can be made much thinner than was previously possible thereby facilitating "scooping" the ball off the ground by the player.

3,591,179
COMBINATION WHIP TOP AND SKILL DEVICE
Kalman Pentek, 121 Grand St., Garfield, N.J.
Filed Aug. 21, 1969, Ser. No. 851,792
Int. Cl. A63b *65/12*
U.S. Cl. 273—97 R **4 Claims**

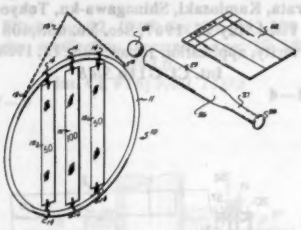


A combination whip top and skill device comprising an oval-shaped top, a cup including a whipping handle and a lash secured to the handle. The lash can be used for spinning the top and then whipping the top in the conventional manner of using a whipping top. The top can also be secured to the lash whereby the top can be used as a skill device by attempting to flip the top on the end of the lash and catching the top on its end in the cup.

3,591,180
RING BALL GAME

Joseph I. Lafon, Sr., 2225 N. Raymond Lane, Altadena, Calif.

Filed Mar. 25, 1969, Ser. No. 810,296
Int. Cl. A63b 65/12
U.S. Cl. 273—101 3 Claims

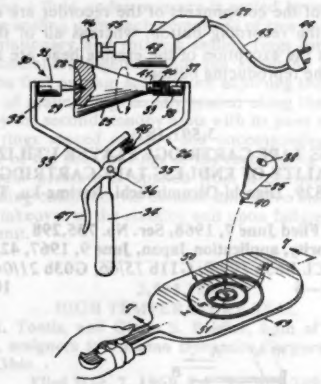


A game consisting of a target comprising a ring having one or more target strips releasably secured thereacross, a ball projector having a handle and a hollow head containing a ball, the ball being projected toward the target by a swinging motion of the handle to strike and disengage a target strip.

3,591,181
COLORED SPEED TOP GAME DEVICE

Lawrence W. Stewart, N87 W15714 Kenwood Blvd., Menomonee Falls, Wis.

Filed July 25, 1969, Ser. No. 844,974
Int. Cl. A63h 1/00
U.S. Cl. 273—101 1 Claim



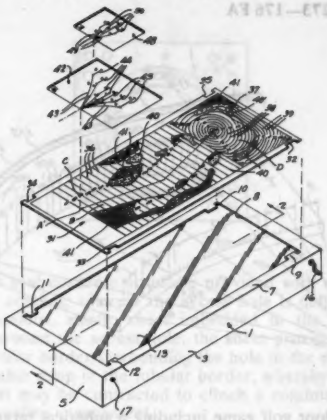
A toy top which is made to spin by a string or other means, the top being rotatable about a downwardly extending spindle and the top being made in any of various colors so as to be attractive in appearance while in motion. The top is combined with a holder in which the top is held rotatably free for rotating the top to a high speed and a paddle having a bullseye imprinted upon its upper side. The paddle is used as a surface on which to catch the top.

3,591,182
GOLF GAME AND METHOD OF PLAY

William R. Grubler, R.D. #4, Box 154, Wheeling, W. Va.

Filed Apr. 26, 1968, Ser. No. 724,441
Int. Cl. A63f 7/06
U.S. Cl. 273—134 2 Claims

The present game simulates the playing of a game of golf whereby the players select a translucent sheet representing the tee, fairway, rough and green for the first hole course and mount the same on a base capable of directing light through said sheet as desired. Thereafter each player selects a shot card in turn and places the same on said sheet at the tee, indicates his elected club, lights the base and from his shot card marks the indicated lay of the ball on said sheet, moves his shot card to the indicated lay of the ball, selects a new club, lights the base and marks the new lay of the ball on the sheet and repeats until the ball is indicated as in the hole on

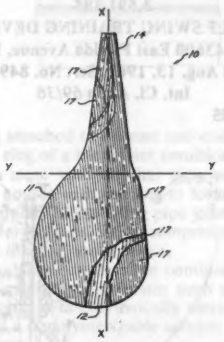


the green. The remaining players in their turn follow the same procedure until all have holed out whereupon they select a new translucent sheet for the second hole, repeat as for the first hole and select further sheets in turn for the remaining holes and play the same in a similar manner.

3,591,183
LAMINATED GOLF CLUB HEAD

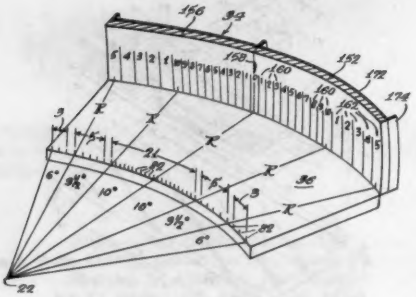
James W. Ford, Nashville, Tenn., assignor to True Temper Corporation, Cleveland, Ohio

Filed May 29, 1969, Ser. No. 829,037
Int. Cl. A63b 53/04
U.S. Cl. 273—167 5 Claims



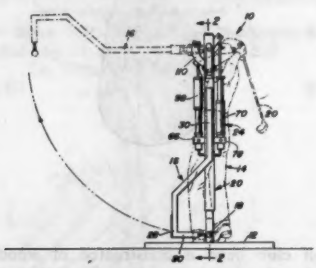
A golf club head is constructed of wood laminations bonded together and bent to form the angle between striking portion and hosel. The grain of each lamination is disposed at an angle of approximately 7½° with respect to the centerline of the hosel as seen from the front of the golf club, and the grain of each lamination is angled oppositely with respect to the grain of the next adjacent lamination. The grain of certain of the laminations are disposed substantially parallel with one lateral side of the hosel; the grain of the adjacent laminations are disposed substantially parallel with the opposite lateral side of the hosel.

3,591,184
SPHERICAL SHELL AND SPIN DETECTOR
Robert M. Conklin, Muskegon, and Robert I. Anderson, Spring Lake, both of, Mich., assignors to Brunswick Corporation
Filed Apr. 30, 1969, Ser. No. 820,558
Int. Cl. A63b 69/36, 67/02
U.S. Cl. 273—176 FA 9 Claims



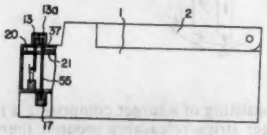
An indoor golf game including a spherical target which is arranged so that all points thereon are equidistant from the tee point. Golf balls rebound from the target at a low velocity, and are returned to the tee area by an inclined runway and a ball elevator system including a motor driven wheel which engages the ball at the tee area. Electrical switches arranged in an arcuate row relative the tee point are actuated by balls rolling down the runway and cooperate with sensors in the target and at the tee point to provide information relating to the theoretical free flight trajectory of the ball, which is projected on a scene of a golf course by a computer controlled golf ball spot projector. The target is formed of interchangeable components to enhance the overall life thereof and the sensors therein are in the form of spaced conductive rubber strips extending horizontally and vertically.

3,591,185
GOLF SWING TRAINING DEVICE
Adolf R. Murat, 43600 East Florida Avenue, Hemet, Calif.
Filed Aug. 13, 1969, Ser. No. 849,795
Int. Cl. A63b 69/36
U.S. Cl. 273—185 15 Claims



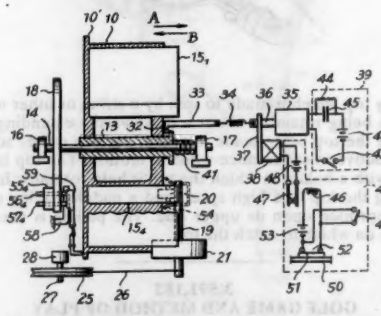
A golf training device in which an impact receiving golf ball element is mounted at the lower end of a pendulum accelerated from a stationary vertical position through an arcuate path of movement by the swing of a golfer's club. Proper movement of the golfer's club following initial impact is monitored by a switch mechanism to energize solenoid devices applying driving force to the pendulum in order to balance its static weight and avoid loading of the golfer's club during the practice swing. Indicators may be provided to detect excessive movement of the pendulum laterally of an arcuate path.

3,591,186
ULTRAMINIATURIZED TAPE RECORDER
Sanjiro Murata, Kamiosaki, Shinagawa-ku, Tokyo-to, Japan
Filed May 15, 1967, Ser. No. 638,408
Claims priority, application Japan, June 15, 1966, 41/38246
Int. Cl. G11b 5/48
U.S. Cl. 274—4 1 Claim



An ultraminiature tape recorder of double panel type having a case comprising front and rear (or upper and lower) compartments partitioned by a dividing means wherein, in one compartment a recess is provided for a tape cartridge with a recording button on that side. In the opposite compartment, a speaker is provided arranged to emit sound in a direction away from the first compartment, and a reproducing button is provided on the side opposite the recording button, thereby eliminating erroneous operation of the recording and reproducing buttons and permitting increased speaker size for a given overall recorder size. Means are provided whereby all of the components of the recorder are actuated on pushing the recording button, whereas all of the components with the exception of the erasing head are actuated on pushing the reproducing button.

3,591,187
ENDLESS TAPE CARTRIDGE PLAYER UTILIZING PLURALITY OF ENDLESS TAPE CARTRIDGES
Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed June 7, 1968, Ser. No. 735,298
Claims priority, application Japan, June 9, 1967, 42/36534
Int. Cl. B65h 19/00; G11b 15/66; G03b 21/04
U.S. Cl. 274—4 10 Claims



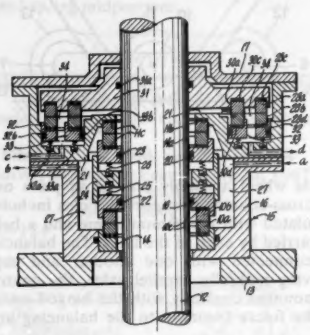
An endless tape cartridge player utilizing a plurality of endless tape cartridges wherein a plurality of endless tape cartridges are received within a housing, the housing is rotated about a central shaft and caused to terminate its rotation to select a desired endless tape cartridge, and further the housing is moved along with the central shaft to bring the leading edge of the cartridge to be selected into a position

opposite a tape reproduction arrangement which comprises a capstan and a magnetic head.

3,591,188
SLIDE RING SEAL FOR ROTATING SHAFTS

Joachim H. Eisner, Kaiserslautern, Upper Palotinate, Germany, assignor to Eisenwerke G.m.b.H., Kaiserslautern/Pfalz, Germany

Filed Aug. 22, 1969, Ser. No. 852,259
Claims priority, application Germany, Aug. 30, 1968, P 17 75 593.0
Int. Cl. F16j *9/00, 15/38*
U.S. Cl. 277—9 **10 Claims**

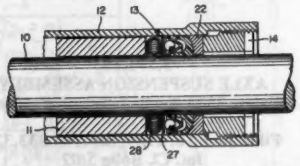


A shaft passing through a wall of a pump or the like device containing a fluid under pressure is sealed by means of two slide ring sealing units each comprised of two pairs of spring-loaded stationary and rotating sealing rings forming closed sealing chambers together with the adjoining walls of the units. The first or main sealing unit adjoining the device with its pairs of sealing rings axially spaced along the shaft is followed by the second standby units with its pairs of concentric sealing rings spaced radially and encompassing at least in part one of the pairs of rings of the first sealing unit. Sealing fluid under pressure is applied from a common source to both sealing chambers via conduit and valve means enabling a ready takeover of the standby unit upon failure of the main sealing unit.

3,591,189
HIGH TEMPERATURE SEAL

James N. Tootle, and Glenn S. Beidler, both of Kalamazoo, Mich., assignors to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Mar. 7, 1969, Ser. No. 805,249
Int. Cl. F16j *15/32*
U.S. Cl. 277—117 **5 Claims**

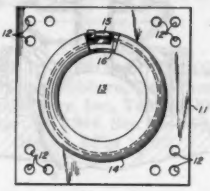


A double lip rod seal in which one lip is curved and tapered, while the other is generally cylindrical, so that the former can experience directed thermal expansion and contraction relative to the surface sealingly engaged by same due to difference in the coefficients of thermal expansion thereof, the lips being spread apart by wedge loading means.

3,591,190
CLINCH SEALS

Fred Winay, 829 Amherst Road, Linden, N.J., and Peter F. Kalksma, 583 Dover Street, Paramus, N.J.

Filed May 23, 1969, Ser. No. 828,451
Int. Cl. F16j *9/06*; F16l *19/00*
U.S. Cl. 277—147 **5 Claims**

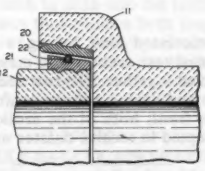


A clinch seal concrete structure provided with an access hole for a conduit, wherein the access hole is defined by a fluid impervious, elastic sheet imbedded in the concrete structure around the access hole; the sheet provided with a hole; a tubular border surrounding the hole in the sheet, and a contractable strap in the tubular border, whereby the hole in the sheet may be contracted to clinch a conduit inserted therein in sealing engagement.

3,591,191
PIPE HAVING A SEALING RING OF A THERMOSET EMULSION

Richard A. Coderre, St. Louis Park, and Robert H. Leitheiser, Jordon, both of, Minn., assignors to Ashland Oil Inc., Houston, Tex.

Filed Apr. 29, 1968, Ser. No. 724,994
Int. Cl. F16j *15/00*
U.S. Cl. 277—207 **10 Claims**



A pipe having attached to at least one end thereof a joint-forming annular ring of a thermoset emulsion. The ring has a configuration to mate with another pipe whose end has a configuration to couple with the ring to form in the presence of a gasket a complete, tight-fitting pipe joint. The thermoset emulsion is a water-in-oil emulsion comprising:

1. water as the discontinuous phase,
2. a polymerizable mixture as the continuous phase, comprising: (a) an unsaturated polyester such as one produced by use of an alpha, beta-ethylenically unsaturated polycarboxylic acid, and a copolymerizable solvent such as styrene.

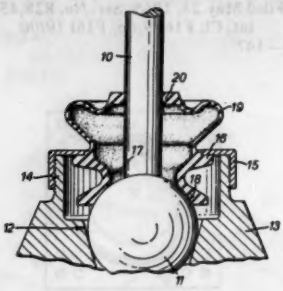
3,591,192
PROTECTIVE GAITERS FOR MECHANICAL EQUIPMENT

David N. Sharp, Dunstable, and Peter Gordon Jenkins, Pontefland, both of, England, assignors to George Angus & Company Limited, Newcastle Upon Tyne, England

Filed June 2, 1969, Ser. No. 829,536
Claims priority, application Great Britain, June 13, 1968, 28241/68
Int. Cl. F16j *15/32*
U.S. Cl. 277—212 FB **3 Claims**

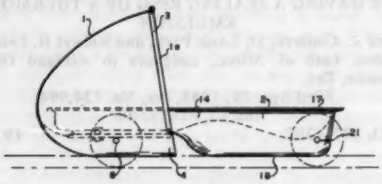
A protective gaiter for a ball-mounted lever is made of an elastomer, for example polyurethane, and is adapted also to

act as a spring resiliently pressing the ball on to its seat. The gaiter has at one end a part-spherical surface to engage the



ball and has a spring-forming corrugation between that end and a flange for fixing the gaiter in position.

3,591,193
MOLDED ARTICULATED SLED
David L. Mitchell, Jr., Riverview Road, Glenwillard, Pa.
Filed Nov. 14, 1969, Ser. No. 876,680
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 3 Claims

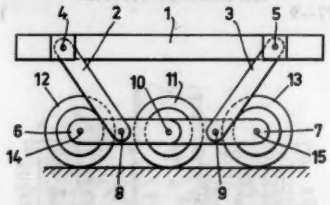


A molded articulated sled having a semihemispherical front and elongated rear section with mated bearing surfaces pivotally connected together. The rear section extending into the front section and having a shape conforming generally to the shape of the front; both of the sections having longitudinal runners adapted to receive coaster wheels and axles.

3,591,194
ICE CHEST CART
Philip Vega, 18-51 Schieffelin Place, Bronx, N.Y.
Filed Nov. 8, 1968, Ser. No. 774,372
Int. Cl. B62b *1/02*
U.S. Cl. 280—47.26 3 Claims

An ice chest cart on wheels which can be carried to picnics, beaches and the like and moved therealong as required. The cart has a plurality of compartments and has means for providing selective entry to some compartments while holding others closed.

3,591,195
WHEEL ASSEMBLY FOR VEHICLES PARTICULARLY INTENDED FOR COMBINED ROAD AND CROSS-COUNTRY TRANSPORTS
Bengt Erland Ilon, Bromma, Sweden, assignor to A. Johnson & Co. H. A. B., Stockholm, Sweden
Filed Apr. 18, 1969, Ser. No. 817,434
Claims priority, application Sweden, Apr. 22, 1968, 5351/68
Int. Cl. B60g *23/00*
U.S. Cl. 280—81 R 8 Claims



A vehicle wheel assembly for use in pairs on combined road and cross-country transport vehicles includes two links each articulated with a common frame and a balancing arm pivotally carried by each of the links. The balancing arms are hingedly connected with one another and support three wheels having mutually parallel axles, the central wheel of which is mounted coaxially with the hinged connection and between the fulcra common to the balancing arms and the links.

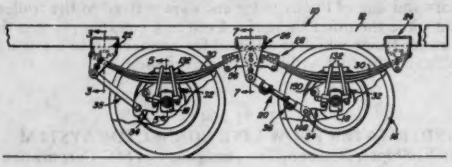
3,591,196
VELOCIPEDE WITH ROCKING SEAT
Henry J. Ott, Old William Penn Hwy., Murrysville, Pa.
Filed Nov. 22, 1968, Ser. No. 778,127
Int. Cl. A63g *17/00*
U.S. Cl. 280—1.195 6 Claims

A velocipede of the tricycle type is disclosed including means for imparting a rocking motion to the seat on which the rider is disposed as the velocipede is propelled by the rider.

3,591,197
AXLE SUSPENSION ASSEMBLY
Richard L. Haley, 2523 North Jefferson Extension, New Castle, Pa.
Filed June 16, 1969, Ser. No. 833,325
Int. Cl. B60g *5/02*
U.S. Cl. 280—104.5 5 Claims

A suspension assembly for tandem axles including an equalizer beam pivot axis defining assembly including (1) a rubber bushed pivot shaft of noncircular configuration and designed to be maintained under compression, rather than being placed under shear stressed, by vertical loading as well as during oscillation of the beam, (2) spring hanger and mounting brackets designed for ease in installation on vehicle

frames and axles with maximum strength, (3) substantially stationarily spaced spring bearing surfaces and (4) improved

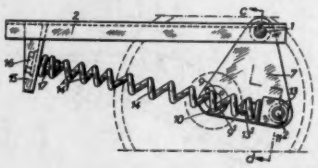


spring-to-axle mounting serving to reduce the length of the static mounted spring midportions.

3,591,198
RESILIENT SUSPENSION FOR INDEPENDENTLY SPRUNG WHEELS

Gerard Brando, 8 rue Edgard Quinet, Saint Etienne, Loire, France

Filed July 24, 1968, Ser. No. 747,264
Claims priority, application France, July 26, 1967, May 7, 1968, 9,794;68/107
Int. Cl. B60g *3/14*
U.S. Cl. 280—124 **11 Claims**

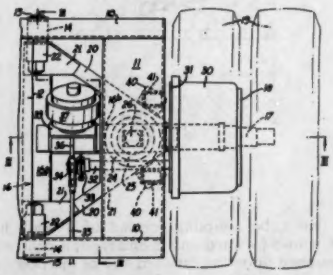


A mechanical, independent, resilient suspension for any kind of vehicle in which a transverse axle rigid with the longitudinal bearers of the vehicle chassis supports at opposite projecting journal portions, an articulated link plate of triangular form the rear end of which externally supports a wheel-supporting stub axle, whereas the front end is connected to one end of the compression coil spring the other end of which is secured to the corresponding longitudinal bearer.

3,591,199
TRAILER VEHICLES

William T. Bowden, Marple, England, assignor to Peak Trailers Limited

Filed Aug. 19, 1969, Ser. No. 851,220
Claims priority, application Great Britain, Aug. 21, 1968, 39952/68
Int. Cl. B60g *9/02*
U.S. Cl. 280—124 **7 Claims**

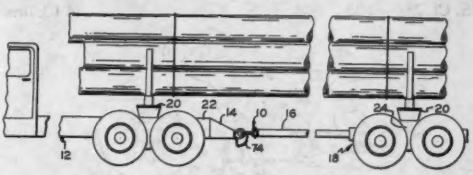


A self-contained suspension system for a trailer vehicle whose front end is adapted for swivellable mounting upon a tractor vehicle, such system comprising an underframe for attachment to the trailer chassis with its major dimension transverse thereto, two wheel-carrying arms with stub axles fixed in corresponding ends thereof and their other ends provided with braced T-heads which are pivoted to said underframe about parallel axes at opposite sides of its midpoint, and coil springs interposed between the outer ends of said arms and adjacent parts of said underframe so that the wheels carried by said arms are sprung independently one of the other.

3,591,200
COMPENSATOR HEAD FOR LOGGING TRAILERS

Frederick F. Van Raden, Hillsboro, Oreg., assignor to Peerless Trailer and Truck Service, Inc., Tualatin, Oreg.

Filed Apr. 25, 1969, Ser. No. 819,138
Int. Cl. B62d *53/00*
U.S. Cl. 280—142 **3 Claims**

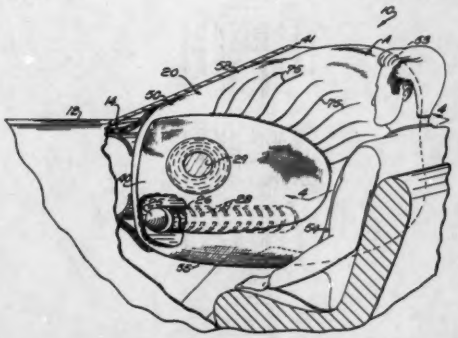


A compensator for achieving longitudinal adjustments in the coupling between a logging truck and the reach of a logging trailer, having a housing attached to the reach and an eye-carrying member reciprocable within an opening in said housing for attachment to the truck. A latch is mounted on the housing retractably to obstruct movement of the reciprocable member within the opening in the housing. A latch-receiving slot is disposed on the reciprocable member intermediate its fully extended and fully retracted positions. The reciprocable member is of constant diameter on both sides of the latch-receiving slot. A cam rod transversely disposed within said housing selectively urges the latch against the constant diameter portion of the reciprocable member, whereby movement of the latter with respect to the housing causes the latch to snap into the latch-receiving portion. The coupling may thus achieve both longitudinal extension and contraction from an initial position determined by the engagement of the latch within the latch-receiving portion of the reciprocable member.

3,591,201
VEHICLE SAFETY APPARATUS

Darrell S. Brawn, Livonia, and Bogdan Lisowsky, Detroit, both of, Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Apr. 9, 1969, Ser. No. 814,639
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 **15 Claims**



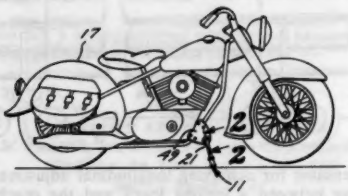
A vehicle safety apparatus includes a confinement which has a collapsed inoperative condition and an expanded

operative condition. The confinement is expanded by directing fluid therein, and when expanded has a substantially uniform pressure throughout. The confinement has a first portion engageable with the head of the occupant and a second portion engageable with the torso of the occupant to apply a restraining force to these respective portions of the occupant during the occurrence of an accident. Means are provided for minimizing the membrance stress in the first portion of the confinement so as to minimize bending of the occupant's head backward relative to his torso.

3,591,202
MOTORCYCLE RIDEOFF STAND

Harold H. Larsen, Long Beach, and Robert E. Oehring, Norwalk, both of, Calif., assignors to Bates Industries, Inc., Long Beach, Calif.

Filed Aug. 4, 1969, Ser. No. 847,039
Int. Cl. B62h *1/02*
U.S. Cl. 280—303 **4 Claims**

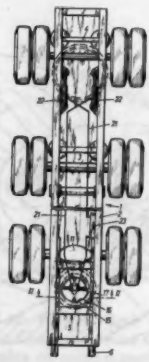


A motorcycle stand having an elongated support sleeve for fixed securement to a motorcycle frame. A pair of ground engaging legs are pivotally carried within the opposite open ends of the sleeve and receive stop pins which slidably travel within arcuate slots in the support sleeve. The pins hold the parts together while allowing the legs to move in the sleeve between their retracted and their ground engaging positions. The legs are each pinned to a central coupling within the sleeve for common pivotal movement. A pair of torsion springs are located within the sleeve, disposed about the legs, and are each secured at one end to an associated leg. The other ends of the springs are anchored to elements secured to and projecting through the sleeve so that the springs are operative to bias the legs rearwardly and upwardly to retracted position once the motorcycle is driven forwardly and off the stand.

3,591,203
HYDRAULIC AUTOMATIC STEERING ARRANGEMENT FOR PULLED VEHICLES

Helmut Steiner, Wiehl, Germany, assignor to Bergische Achsenfabrik Fr. Kotz & Sohne, Wiehl Chlerhammer, Germany

Filed May 1, 1969, Ser. No. 821,036
Claims priority, application Germany, May 2, 1968, P 17 55 368.3
Int. Cl. B62d *13/02*
U.S. Cl. 280—426 **12 Claims**

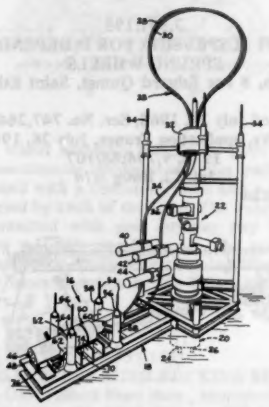


A steering system for steerable rear wheels of a trailer vehicle in which receiving fluid motors are connected to the said rear wheels to cause turning thereof while a sending piston cylinder arrangement is connected in circuit with the fluid motors. The piston is engaged by a cam to move the piston in the cylinder to displace fluid to and from the fluid motors and one of the cylinder and cam is fixed to the trailer frame while the other thereof is fixed to a member pivoted to the trailer frame which is adapted for connection to a towing vehicle so as to turn with the towing vehicle.

3,591,204
UNDERWATER FLOW LINE CONNECTOR SYSTEM

Kelly V. Shipes, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.

Filed May 7, 1968, Ser. No. 727,190
Int. Cl. F16l *39/00, 3/08*
U.S. Cl. 285—26 **10 Claims**

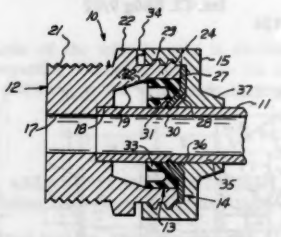


A remotely controllable, hydraulic-powered connector system for coupling and uncoupling a fluid flow line at an underwater or other remote location, particularly at the site of an underwater wellhead, including a mechanism for releasably latching the connector in place to a foundation structure at the coupling site, and a system for indicating whether or not the apparatus is in a fully coupled or uncoupled condition.

3,591,205
TUBE COUPLING

Jacob J. Hamburg, 2003 West Eight Mile Road, Detroit, Mich.

Filed Dec. 17, 1969, Ser. No. 885,689
Int. Cl. F16l *17/02*
U.S. Cl. 285—81 **4 Claims**



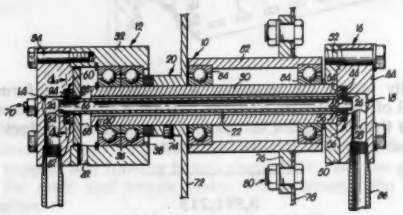
A slip-in-type tube coupling formed of a body having a central bore whose forward end is enlarged, a centrally apertured cap fastened upon the forward end of the body, a springy grab ring having an outer flat edge portion squeezed against the body forward end by the cap, and an inner frustoconical-shaped tube-gripping portion. A U-shaped resilient sealing ring with a corresponding frustoconically shaped base receives the gripping portion in face-to-face con-

tact, with its outer leg sealing against the wall of the enlarged portion of the bore and its inner leg sealing against the tube.

3,591,206
ROTARY WATER DISTRIBUTOR FOR ROTATABLE SPRAY ASSEMBLY

Paul S. Giovagnoli, 4200 Birmingham Road, Kansas City, Mo., and Richard F. Smith, Prairie Village, Kans., assignors to said Giovagnoli

Continuation of application Ser. No. 616,829, Feb. 17, 1967, now abandoned. This application Apr. 1, 1969, Ser. No. 812,460
Int. Cl. F16l *17/00, 27/00*
U.S. Cl. 285—98 **4 Claims**

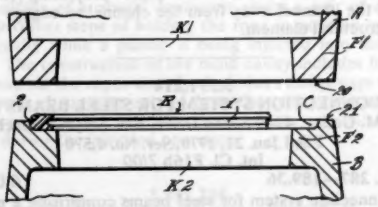


A rotary fluid distributor having a base and a head rotatable on the base. A tubular conduit extends along the axis of rotation of the head and intercommunicates respective passageways in the head and the base so that fluid may be conducted between the base and the head during rotation of the latter. A packing member at each end of the conduit mounts the conduit on the head and the base respectively and is disposed for preventing leakage of fluid from the zone of communication between the respective end of the conduit and the proximal passageway. The packing members are arranged to permit floating movement of the conduit relative to the head and the base to preclude uneven wear of the packing in the event that the head tends to move laterally with respect to the base. Two species of the distributor are disclosed. In the first, the head is rotated mechanically and in the second the head is rotated by the reaction to the streams of fluid leaving the head.

3,591,207
LEAK-TIGHT SEAL BETWEEN MATING PORTIONS OF ASSEMBLED HOLLOW CASTINGS

Leonard A. Fisher, Granby, Conn., assignor to The H. B. Smith Company, Incorporated, Westfield, Mass.

Filed July 31, 1969, Ser. No. 846,468
Int. Cl. F16l *17/00*
U.S. Cl. 285—111 **4 Claims**

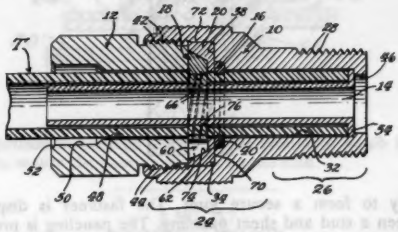


A leak-tight seal between two cast iron parts (for example, cast iron boiler sections) such that machining of the metal parts is not required, and wherein resilient gaskets are substituted for the usual metal push nipples. One of the parts has a rabbet opening at it inner periphery. The rabbet is adapted to completely contain the gasket when the two parts are drawn together. The gasket is characterized in that it has outer and inner peripheral grooves.

3,591,208
PRESSURE FITTING FOR PLASTIC TUBING

Ronald W. Nicolaus, Peoria, Ill., assignor to Eclipse Fuel Engineering Co., Rockford, Ill.

Filed May 2, 1969, Ser. No. 821,316
Int. Cl. F16l *33/18*
U.S. Cl. 285—250 **4 Claims**

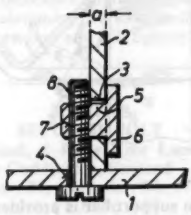


A pressure fitting for connecting a metal pipe to a length of plastic tubing, the fitting being in the form of an adapter wherein the pressure of a nut, which is screwed into a fitting body, shrinks a split retaining ring tightly upon the plastic tubing to prevent tube pullout, and also compresses a sealing ring between the fitting body and the tubing.

3,591,209
DEVICE FOR CONNECTING SHEET ELEMENTS AT RIGHT ANGLES TO EACH OTHER

Wilhelm Knechtel, Rodheim-Bieber, Germany, assignor to ECE-Elektrostatik und Chemische Entwicklungsgesellschaft mbH, Giessen, Germany

Filed Apr. 27, 1970, Ser. No. 32,174
Claims priority, application Germany, Apr. 26, 1969, P 19 21 490.5
Int. Cl. F16b *5/00*
U.S. Cl. 287—20.92 **6 Claims**



A pin having a transverse threaded bore therethrough passes through an opening in a sheet element and a screw passing through an opening in a second sheet element at right angles to the first element is threadedly received within the pin bore. The threaded bore is spaced from the head of the pin a distance corresponding to the thickness of the sheet element through which the pin passes so that the entire length of the screw is positioned against a face of the pin-carrying sheet element.

3,591,210
DOUBLE-ENDED RING FASTENER AND JOINT THEREWITH

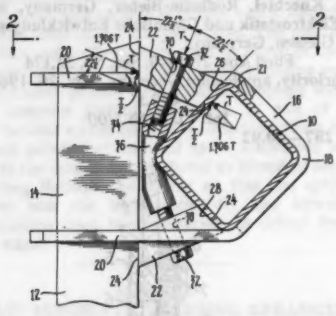
Richard E. Heise, Miami, Fla., assignor to Automated Building Components, Miami, Fla.

Continuation-in-part of application Ser. No. 755,673, Aug. 27, 1968, now Patent No. 3,485,518. This application Aug. 27, 1969, Ser. No. 853,414
Int. Cl. F16b *5/00, 15/00*
U.S. Cl. 287—20.92 **17 Claims**

The double-ended fastener comprises an elongated sheet metal body having a plurality of longitudinally spaced teeth extending in opposite lateral directions in the plane of the

body. The fastener is formed into a ringlet with each tooth being planar, the ringlet being thereby polygonally shaped. The tips of the teeth are bent outwardly of the planes thereof, and upon imbedment cause the teeth to clinch outwardly to form a secure joint. The fastener is disposed between a stud and sheet paneling. The paneling is pressed toward the stud to imbed the teeth of the fastener into the stud and paneling thereby securing one to the other.

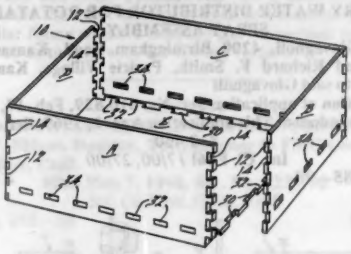
3,591,211
SUPPORT BAR CLAMP
Clarence B. Richey, Royal Oak, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 28, 1969, Ser. No. 853,859
Int. Cl. F16b 7/00
U.S. Cl. 287—54 **5 Claims**



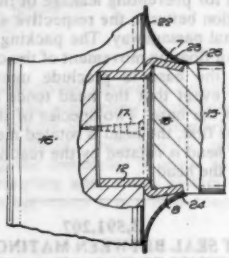
A square section support bar is provided with a clamp for clamping another bar to it in perpendicular relation. The clamp comprises a generally U-shaped strap embracing one-half the periphery of the support bar and having a pair of aligned slots in its legs for receiving the other bar. A pair of wedges are interposed between the bars and are apertured at an oblique angle to the other bar to receive bolts which interconnect with a threaded member between the bars. Tightening the bolts forces the bars apart. Since the force is applied at an angle to the shank, the lateral tension force is greater than the bolt tension force. This enables use of a smaller more compact clamp.

3,591,212
CONSTRUCTION FOR DOVETAIL JOINT
Jeff S. Rhyne, 537 East Lafayette Street, Marianna, Fla.
Division of Ser. No. 608,545, Jan. 11, 1967, Pat. No. 3,442,311. Filed Feb. 26, 1969, Ser. No. 802,520
1969, Ser. No. 802,520
Int. Cl. F16b 7/00
U.S. Cl. 287—20.92 D **4 Claims**

An interlocking structure for forming a right-angle joint between two panel members wherein an edge of each member is stamped to form alternate dovetail tenons and mortises along that edge, whereafter the panel members are pressed together at right angles to force the tenons on the one member into the mortises on the other member. As the tenons enter the mortises, the material of each is deformable to allow the small edge dimension of the mortises to pass the large leading portion of the tenons and allow the tenons to seat fully within the mortises. Accordingly, the deformed material of the mortises expands to form a structure adapted to grasp the root of the tenons and form a joint interlocking in both directions of relative movement.



3,591,213
CONNECTING MEMBER
Jack Turner, Nathershaw, Oldham Lancashire, England, assignor to Kenneth Broadbent, Lydgate, Oldham, England, a part interest
Filed June 28, 1967, Ser. No. 649,678
Claims priority, application Great Britain, Aug. 8, 1966, 30,698/66
Int. Cl. E04g 3/08; E06c 7/50; F16b 9/00
U.S. Cl. 287—20.94 **2 Claims**

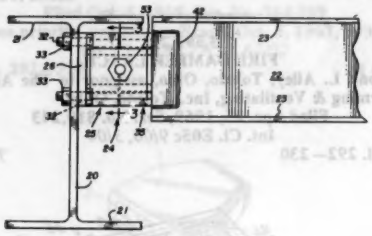


A connecting member for connecting together two flat structural elements, for example a tread and a stringer of an open staircase, with an edge of one structural element abutting the face of the other, the member comprising a channel section metal member to receive an edge of one of the structural elements and two spigots projecting from the base of the channel away from the channel to engage in the other structural element.

3,591,214
CONNECTION SYSTEM FOR STEEL BEAMS
Harry M. Gallay, 4649 Saxon Drive, New Smyrna Beach, Fla.
Filed Jan. 21, 1970, Ser. No. 4,570
Int. Cl. F16b 7/00
U.S. Cl. 287—189.36 **6 Claims**

A connection system for steel beams comprising a pair of fittings, one designed to be fastened to a support beam or column, and the other to a framing beam, each fitting provided with a plurality of parallel grooves on each of its sides extending parallel to and normal to the axis of the framing beam, the grooves of the two sides being staggered relatively to each other, each fitting having a notch in that face which abuts the other fitting, the notches matching to form a hole extending through the abutting fittings, a male and a female tongue plate provided with tongues which enter the grooves of the two fittings when axially aligned with each other, and a fastener which preferably is a stud integral with the male ton-

gue plate extending through the hole formed by the matching notches in the abutting fittings and through a hole in the female tongue plate, and a nut on the free end of the stud for drawing the plates together and connecting the tongue plates and fittings together, to thereby connect the beams to which

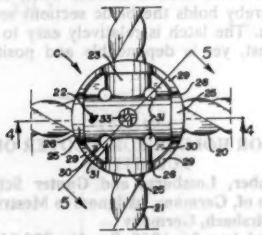


the fittings have been fastened. The same system can be achieved by providing the tongues on the fittings fastened to the support and framing beams respectively, and the grooves on the male and female plates which connect the fittings together.

3,591,215
PLASTIC ROPE CONNECTOR

Richard H. Frost; John Maguire, and Jonathan E. Sharp, all of Littleton, Colo., assignors to Rose Manufacturing Company, Kansas City, Mo.

Filed Aug. 6, 1969, Ser. No. 847,884
Int. Cl. F16b *7/04*
U.S. Cl. 287—77 **6 Claims**



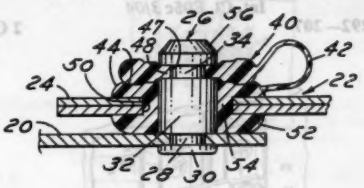
This invention concerns a plastic, buttonlike connector for securing a pair of crossed ropes together and also, a method and mold for forming the connector upon a pair of crossed ropes by injection molding operations. The method of injection molding of a plastic connector about a pair of crossed ropes involves steps of holding the rope in position within a mold cavity while a plastic is being injected into the mold cavity. The construction of the mold cavity includes features to so restrain the ropes and also includes passageways to permit a pair of ropes to extend from the cavity, but with the passageways being closed by the ropes to prevent loss of plastic during the injection operation.

3,591,216
BEARING FASTENER AND ASSEMBLY

George R. Onufer, Bloomfield Hills, Mich., assignor to Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N.Y.

Filed Feb. 26, 1969, Ser. No. 802,448
Int. Cl. F16b *17/00*
U.S. Cl. 287—93 **8 Claims**

A bearing fastener having an annular bearing portion including an annular cylindrical bearing sleeve portion and an integral radially outwardly extending annular head portion, an annular locking ring portion, and a resilient connecting portion integral with the head portion and the locking ring portion. In the bearing assembly, the bearing sleeve portion is received over a cylindrical bearing portion of a stud connecting two relatively movable members. The annular locking

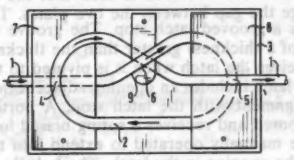


ring portion is received in an annular groove or notch in the stud to secure the bearing portion on the stud.

3,591,217
KNOTTING DEVICE

Roland Melzer, Schwelm, Germany, assignor to Messrs. R. Melzer OHG

Filed Aug. 21, 1969, Ser. No. 851,887
Int. Cl. B65h *69/04*
U.S. Cl. 289—2 **11 Claims**

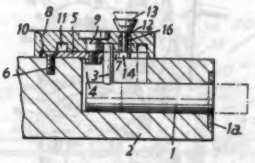


A method and a device for knotting one or multiple yarns, threads or the like in which the yarn end to be knotted is forced to move along a looped path by means of pneumatic forces. The yarn is thereafter liberated from the path defining channel thereby maintaining the loop so that a pulling force exerted upon the free yarn end will tighten the knot provided by the loop.

3,591,218
SECURITY BOLT

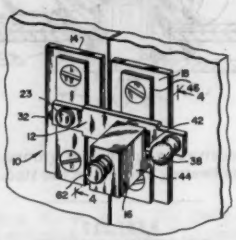
Cyril James Gowland, 2 Holly Tree Lane, Nr. Aylesbury, Buckinghamshire Cuddington, England

Filed Nov. 29, 1968, Ser. No. 779,678
Int. Cl. E05c *1/10*
U.S. Cl. 292—140 **3 Claims**



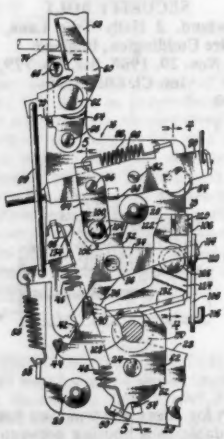
A security bolt for doors and windows has a bolt element longitudinally slidable in a housing between projecting and withdrawn positions, a guide element mounted on the bolt and projecting normally to the axis of movement of the bolt element, a guide member having a slot positioned parallel to the axis of movement of the bolt element and through which slot the guide element protrudes, and a knob rotatably mounted on the guide member and having in its face adjacent to the guide member a scroll groove in which the free end of the guide element engages, such that upon rotation of the knob the bolt element is caused to slide longitudinally.

3,591,219
SAFETY DOOR LOCK
Michael Graziosi, 383 Second St., Jersey City, N.J.
Filed July 18, 1969, Ser. No. 843,143
Int. Cl. E05c 3/04
U.S. Cl. 292—207 2 Claims



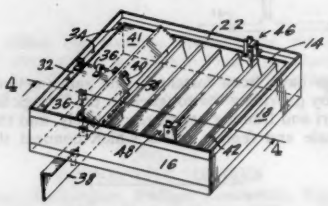
A tamperproof safety lock for securing a doorway is provided. The latch is pivotally mounted at one end to a plate which is secured to the inside surface of the door adjacent to the edge. A second plate is mounted on the door molding in alignment with the first plate. The distance between the two plates when the door is closed is such that the latch may pivot to bridge the gap between the two plates. The second plate includes a grooved latch stop. The groove within the latch stop is of a thickness greater than the thickness of the latch and receives the latch when it is pivoted to the locked position. The latch includes an opening adjacent the free end thereof in alignment with the latch stop. A portion of the latch stop is bored and receives a spring biased locking bolt which may be manually operated to extend into the groove and through the opening in the latch. The bolt thus prevents the latch from being rotated to the "open" position.

3,591,220
CLOSURE LATCH
Bela Sandor, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 9, 1969, Ser. No. 840,400
Int. Cl. E05c 3/36
U.S. Cl. 292—216 4 Claims



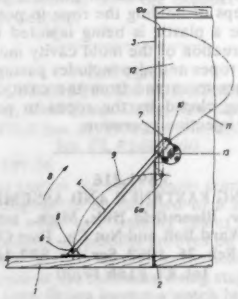
A detent and detent release lever of a door lock are coaxially pivoted and provided with spaced opposed edge portions. A pin of an intermittent member supported on a locking lever is movable between the opposed edge portions to couple the levers or is movable out of engagement with one edge portion to uncouple the levers when the locking lever is respectively moved between unlocked and locked positions. The detent release lever is coupled to inside and outside operating means to release the detent when the levers are coupled. If the levers are uncoupled when the bolt is in unlatched position, they will remain uncoupled when the bolt is in unlatched position, they will remain uncoupled when the bolt moves to latched position to thereby provide a set and slam feature.

3,591,221
FIRE DAMPER LATCH
Raymond L. Alley, Toledo, Ohio, assignor to The American Warming & Ventilating, Inc., Toledo, Ohio
Filed Apr. 25, 1969, Ser. No. 819,243
Int. Cl. E05c 9/00, 3/04
U.S. Cl. 292—230 7 Claims



A latch is designed for a fire damper, the blades of which are integrally formed from an imperforate sheet. With a fire damper of this type, when the integral blade sections are held in a retracted, open position by a fusible link, they are in a stressed condition. Consequently, when the fusible link is parted, the blade sections will move quickly across the frame and close the damper without the use of auxiliary springs or other closure devices. The latch for the fire damper engages in intermediate blade section thereof when the damper is closed and thereby holds the blade sections securely in the closed position. The latch is relatively easy to manufacture and low in cost, yet is dependable and positive-acting in operation.

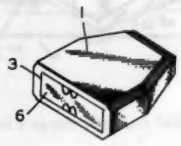
3,591,222
SUPPORT OR HOLDER FOR A COVER OR LID OF FURNITURE
Christian Schaber, Lossburg, and Gunter Schmid, Dietersweiller, both of, Germany, assignors to Messrs. Franz Heittich KG, Alpirsbach, Germany
Filed Aug. 26, 1969, Ser. No. 853,119
Claims priority, application Germany, Aug. 30, 1968, G6753556
Int. Cl. E05c 17/04; G65d 43/24
U.S. Cl. 292—262 10 Claims



A cover or lid hinged on a piece of furniture about a horizontal axis in supported in horizontal position by a bar pivoted at one end to the lid, the other end of the bar passing through an opening in a guide pivoted to the furniture about a horizontal axis. The through cavity of the guide tapers out-

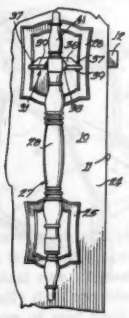
wardly in both directions from intermediate points of the inner walls thereof.

3,591,223
SINGLE-USE SEAL LOCK
Eduardo de Lima Castro Neto, Estrada do Timbo, 63 Rio de Janeiro, Brazil
Filed Oct. 1, 1968, Ser. No. 764,109
Claims priority, application Brazil, Oct. 3, 1967, 193,500
Int. Cl. B65d 27/30, 67/02
U.S. Cl. 292—320 4 Claims



A seal lock designed for a single use having a socket member and a plug insertable in said socket. The plug is provided with flexible arms which will coact with ledges in the socket portion to prevent removal of the plug when once inserted. The socket is provided with apertures for wires or threads and also the plug is provided with furrows for carrying such wires and threads.

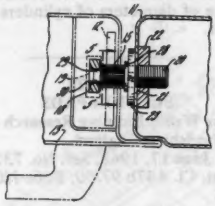
3,591,224
DIVIDED THUMBPIECE LATCH
Robert K. Unter, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Sept. 26, 1969, Ser. No. 861,349
Int. Cl. E05b 3/00; E05c 1/12
U.S. Cl. 292—336.3 2 Claims



A handle and latch assembly for a door having a thumbpiece actuating a retractable latchbolt from engagement with a strike. A generally upright handle is mounted on the door with the thumbpiece having a single actuating shank behind the upper end of the handle and a divided or bifurcated thumb-engaging portion extending around and outwardly of the upright handle with the bifurcation allowing movement of the thumbpiece relative to the handle.

3,591,225
STRIKER FOR USE WITH A VEHICLE LATCH
Lawrence P. Hagemeyer, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed Feb. 24, 1970, Ser. No. 13,694
Int. Cl. E05b 15/02
U.S. Cl. 292—340 6 Claims

A washer formed separately of the striker body is telescoped nonrotatably onto a hex formed on the body so

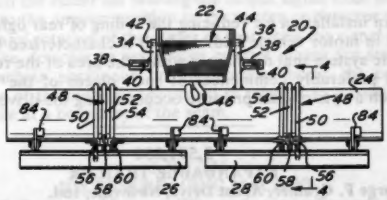


that the striker may be threaded into the doorpost of the vehicle by turning the washer with a driving socket.

3,591,226
GRIPPING DEVICE FOR HANDICAPPED PERSON
Hobson J. Elmore, Jr., 2772 Oakland Terrace, Decatur, Ga., and William F. Elmore, 214 Ridgeway Drive, Gulfport, Miss.
Filed May 19, 1969, Ser. No. 825,758
Int. Cl. A47f 13/06
U.S. Cl. 294—19 3 Claims

This gripping device has an elongated tube with a handle at one end and a shoehorn at the other end. A pivotable arm is located near the shoehorn and is operated by a cable which extends through the tube and terminates at the handle. The arm cooperates with the shoehorn in gripping a shoe. The arm can be spring biased to open or closed position with respect to the shoehorn. When in closed position the arm and shoehorn can grip an article therebetween.

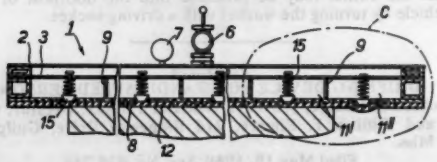
3,591,227
ARCUATE VACUUM LIFTER
Jacob J. Creskoff, Wynnewood, Pa., assignor to Vacuum Concrete Corporation of America, Philadelphia, Pa.
Filed Feb. 20, 1968, Ser. No. 706,980
Int. Cl. A47b 47/00; B66c 1/02
U.S. Cl. 294—65 5 Claims



A vacuum lifter which comprises an elongated frame having an arcuate concave surface and a deformable resilient gasket secured to the concave surface about the periphery thereof. A plurality of longitudinally extending deformable resilient gaskets are provided which extend along the lifter and are secured to the concave surface between the ends of the peripheral gasket and parallel to the sides of the peripheral gasket. The gaskets thereby form a plurality of longitudinally extending open chambers. Each of the chambers includes individual means which define a port for con-

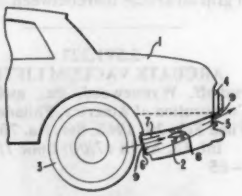
necting the chambers to a source of reduced pressure. Means are also provided for selectively connecting either all of the ports to a source of reduced pressure or only a port of a central one of the chambers to a source of reduced pressure so that a large range of diameters of cylinders may be lifted to said vacuum lifter.

3,591,228
SUCTION PADS
David John Tudor Webb, Building Research Station, Garston, Watford, Hertfordshire, England
Filed June 17, 1968, Ser. No. 737,781
Int. Cl. A47b *97/00*; B66c *1/02*
U.S. Cl. 294—65 **3 Claims**



There is described a suction pad presenting a lifting surface whose effective area can be altered to suit the size and shape of article to be lifted.

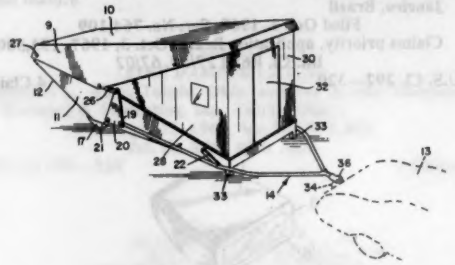
3,591,229
INSTALLATION FOR REDUCING THE SOILING OF REAR LIGHTS OR THE LIKE AT MOTOR VEHICLE BODIES
Karl Wilfert, Gerlingen-Waldstadt, and Hans Gotz, Magstadt, Wurttemberg, both of, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed July 11, 1968, Ser. No. 744,067
Claims priority, application Germany, July 14, 1967, D 53598
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 **9 Claims**



An installation for reducing the soiling of rear lights or the like in motor vehicle bodies which is characterized by an air guide system that discharges within the area of the rear lights and preferably commences at such places of the body, at which a dynamic air pressure occurs during the drive.

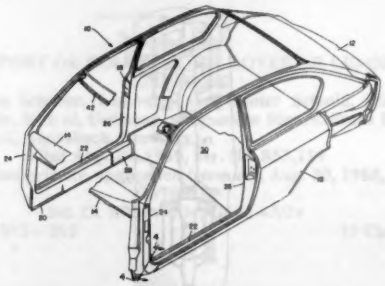
3,591,230
EXPANDABLE TRAILER
George F. Cramer, Artist Drive, Nashville, Ind.
Filed Mar. 12, 1969, Ser. No. 806,450
Int. Cl. B60p *3/38*
U.S. Cl. 296—23 **7 Claims**

A trailer having linkage members connected to its drawbar for tilting the trailer bed when its wheels are held stationary and the drawbar is moved. The invention is embodied in an expandable camper trailer having a roof portion hinged to the trailer bed at the rearward end thereof. In this camper trailer embodiment the drawbar is connected to a forklike extension which has sections disposed adjacent the sides of the trailer bed, and which operates on a plurality of linkages to force the trailer roof upward and the bed downward, at their forward ends. Opening of the camper trailer is effected when a pulling force is applied to the drawbar, while blocking the wheels against movement. In another embodiment the trailer is tilted downward at its rearward end to



facilitate the loading of cattle or heavy equipment on the trailer. In this embodiment the drawbar is formed of telescoping sections and is moved rearwardly, while the wheels are held stationary, thereby causing a linkage attached thereto to push the forward end of the trailer upwardly.

3,591,231
FABRICATED UNISIDE FOR A UNITIZED BODY
Henry W. Wessells, Paoli, and Walter S. Eggert, Jr., Huntingdon Valley, both of, Pa., assignors to The Budd Company, Philadelphia, Pa.
Filed July 16, 1969, Ser. No. 842,279
Int. Cl. B62d *25/02*
U.S. Cl. 296—28 R **3 Claims**

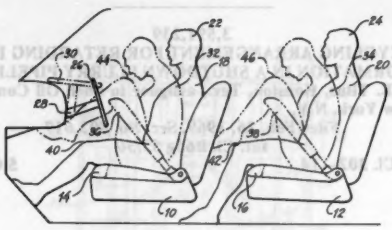


A fabricated uniside unit for a unitized body structure utilizing small economical stampings doubled in high-stress areas for greater strength and forming frustum-reinforced beam sections at extremely stressed areas. Portions of the uniside units form side sill structure while other portions act as shear panels for supporting load applied to the body structure.

3,591,232
AUTOMATIC VEHICLE OCCUPANT RESTRAINT
Lewis B. Simon, 1801 Joanne Way, Oxnard, Calif.
Filed Apr. 1, 1969, Ser. No. 812,472
Int. Cl. B60r *21/10*
U.S. Cl. 297—216 **9 Claims**

An occupant-restraining member embodied into a vehicle seat constructed so as to automatically enfold and restrain the occupant in the event of a sudden vehicle deceleration.

In operation the restraining member is abruptly raised so as to contact the underside of the occupant's upper legs and fold the occupant's upper legs and body between it and the seat back.

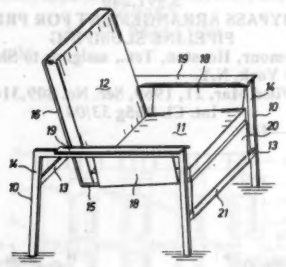


3,591,233

ARTICLE OF FURNITURE

Christian H. Turcksin, 69a Bachstrasse, Detmold, Lippe, Germany

Filed Jan. 8, 1969, Ser. No. 789,832
Claims priority, application Austria, June 17, 1968, A5794/68
Int. Cl. A47c *3/025*
U.S. Cl. 297—276 **11 Claims**



An article of furniture, such as a chair, comprising: a base frame formed from at least two spaced-apart side sections interconnected by at least one cross-strut; at least one back and seat unit universally displaceable between said side sections by the suspension of said back and seat unit between said side sections by means of at least one elastic sheet secured at at least one end to at least one side section and being in supporting engagement with said back and seat unit and optionally provided with an elastic retaining strip securable at one end to said back seat unit and at its other end to a cross-strut in the front region of said base frame so as to limit the rising movement of the front of said back and seat unit when loaded.

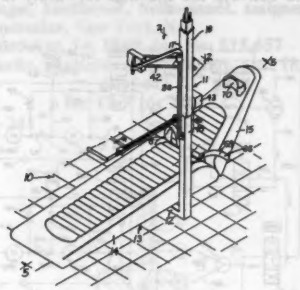
3,591,234

DENTIST CHAIR

John J. Condon, S. 1927 Post, Spokane, Wash.

Filed June 2, 1969, Ser. No. 829,245
Int. Cl. A47c *1/02*
U.S. Cl. 297—346 **6 Claims**

A dentist chair is described that is suspended from the ceiling on a telescoping post having a horizontally extending arm for supporting the chair above a floor without any obstruction between the chair and the floor. The chair may be raised and lowered as desired by extending or contracting the post.



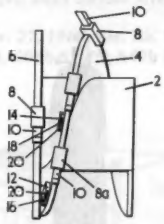
The chair can also be moved horizontally parallel with the major axis of the chair.

3,591,235

CUTTERS FOR MINERAL-MINING MACHINES

George T. Addison, Burton-on-Trent, England, assignor to Coal Industry Patents Limited, London, England

Filed Feb. 24, 1970, Ser. No. 13,654
Claims priority, application Great Britain, Mar. 4, 1969, 11447/69
Int. Cl. E21c *35/08, 25/08*
U.S. Cl. 299—1 **14 Claims**



A cutterhead for a mineral-mining machine, particularly a shearer-loader, comprises a rotary cutter equipped with fixed cutter tools distributed around the head. Adjacent to the periphery of the head but spaced from one another are mounted a source and a detector of electromagnetic radiation, the detector deriving an output signal dependent upon the amount of radiation detected by backscatter from the strata adjacent to the cutter and gives a measure as to the thickness of coal remaining after cutting. Means are also provided on the cutter for relating the output signal from the detector to the angular position of the source or detector about the axis of rotation of the cutter so that when the signal is fed from the detector to responsive control means for steering the machine positioned on the machine body, the cutting horizon of the cutter is controlled in relation to a coal/stone interface at a boundary of the seam.

3,591,236

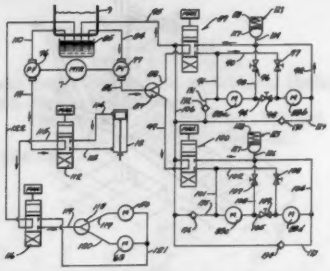
ICE RESURFACING MACHINE

Kenneth R. Jones, Mequon, Wis., assignor to Tennant Company, Minneapolis, Minn.

Continuation-in-part of application Ser. No. 624,080, Mar. 17, 1967, now Patent No. 3,475,056. This application Oct. 24, 1969, Ser. No. 869,247
Int. Cl. E01c *23/12*; E01h *5/12*
U.S. Cl. 299—24 **17 Claims**

A self-propelled vehicle adapted to move over the surface of an ice rink and remove a layer of ice and subsequently spread a film of water over the shaved ice surface. The vehicle includes an ice-removing unit located at the rear of the

vehicle and mounted such that the unit is pushed, rather than pulled, over the ice surface. The ice-removing unit comprises a cutting blade to shave the ice, and a rotating brush sweeps the ice and conveys the shavings forwardly to a transverse



auger conveyor which delivers the shavings to an elevator that functions to convey the shavings to a tank on the vehicle. A hydraulic drive system is employed which enables an infinitely gradual application of torque to be applied to retain frictional engagement between the wheels and the ice.

3,591,237

MOP HEAD MAKING MACHINE WITH AUTOMATIC CYCLING CONTROL

Gerald G. Swenson, Atlanta, Ga., assignor to American Associated Companies, Atlanta, Ga.

Filed Nov. 21, 1968, Ser. No. 777,641
Int. Cl. A46d *9/00*
U.S. Cl. 300—16 **2 Claims**

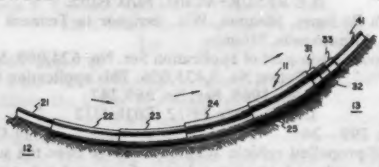
The sequence of operations for making a mop head are automatically cycled by the use of pressure-responsive valves and switches in a hydraulically actuated circuit. The pressure-responsive switches and valves assure that the individual operations are uniform from cycle-to-cycle and accommodate for variations in size, etc. which may be encountered from one mop head to another, thus assuring uniformity in the products.

3,591,238

MULTI-DIAMETER PIPELINE ARRANGEMENT FOR FACILITATING RESUSPENSION OF SETTLED SLURRY SOLIDS

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 26, 1969, Ser. No. 802,613
Int. Cl. B65g *53/30, 53/52*
U.S. Cl. 302—14 **4 Claims**



Method and apparatus for facilitating resuspension of a slurry material solid phase in a shut-down slurry pipeline upon restart. The internal diameter is progressively increased in the direction of slurry flow in those portions of the pipeline where plug formation by settled slurry solids during pipeline shutdown is likely to occur.

3,591,239

RECYCLING ARRANGEMENT FOR RETARDING PLUG FORMATION IN A SHUTDOWN SLURRY PIPELINE

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 26, 1969, Ser. No. 802,617
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **5 Claims**

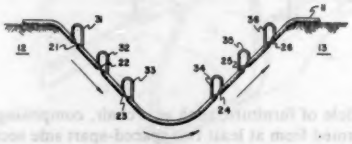
Method and apparatus for retarding plug formation in a shutdown slurry pipeline. Means is provided whereby slurry liquid phase within upper elevations of the shutdown line is recycled into lower portions of the line where slumping and compacting of the solid phase may occur.

3,591,240

VALVED BYPASS ARRANGEMENT FOR PREVENTING PIPELINE SLUMPING

Errol V. Seymour, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,316
Int. Cl. B65g *53/04*
U.S. Cl. 302—14 **9 Claims**



Method and apparatus for preventing downhill slumping in a shut-down slurry pipeline. Automatic shutoff valves are placed along the sloping portions of the pipe and at each valve location an alternate slurry path is provided, said path offering resistance to the slurry flow sufficient to prevent movement of the slurry when the only driving force is gravity. The alternate slurry path has sufficient storage capacity to accommodate and retain slurry material therein against downward movement in the pipeline, said slurry material having been introduced into the path upon pipeline shutdown.

3,591,241

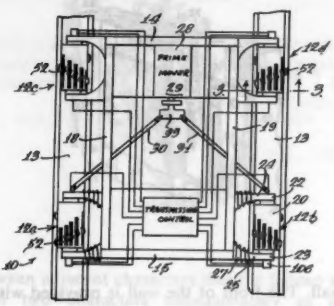
HELICAL DRIVE

Dillis V. Allen, 208 Euclid Ave., Arlington Heights, Ill.

Filed July 8, 1968, Ser. No. 743,213
Int. Cl. B61f *11/00*
U.S. Cl. 305—8 **19 Claims**

A vehicular drive in which the ground-engaging devices take the form of a plurality of roadway-engaging rollers ar-

ranged in a helical path around an axis parallel to the direction of movement of the vehicle, with control means for



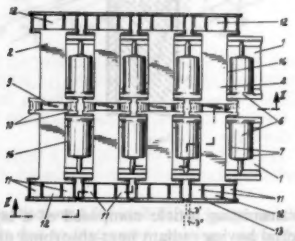
shifting the position of the rollers into any desired helical path to effect an infinitely variable transmission ratio.

3,591,242

TRACK FOR TRACKLAYING VEHICLES

Hans Borner, Homburg (Saar), Germany, assignor to Gerlach-Werke GmbH, Homburg (Saar), Germany

Filed Mar. 14, 1969, Ser. No. 807,389
Claims priority, application Germany, Mar. 16, 1968, P 16 80 325.1
Int. Cl. B62d *55/20*
U.S. Cl. 305—36 12 Claims



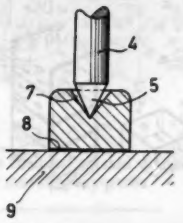
A track for tracklaying vehicles has a plurality of track links adjacent ones of which define with one another gaps which extend transversely of the travel of the track. Each track link has a ground-contacting surface and a wheel-contacting surface which both extend transversely of the travel of the track and which both are bounded by lateral edges. The lateral edges of the wheel-contacting surface are inwardly offset with reference to those of the ground-contacting surface. Connecting means pivotally connects the links for pivotal movement about pivot axis extending in direction transversely of the travel of the track and which are inwardly offset with reference to the lateral edges of the ground-contacting surfaces. A plurality of bridging members are respectively located in the gaps between adjacent links and pivotably connected to the latter. The bridging members each have a wheel-contacting face bridging the gap between the respective wheel-contacting surfaces of the associated adjacent links and in effect constituting extensions of these wheel-contacting surfaces.

3,591,243

BEARING ELEMENTS

Wilhelmus Franciscus Knippenberg, and Gerrit Verspui, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,657
Claims priority, application Netherlands, Apr. 18, 1968, 6805443
Int. Cl. F16c *1/24*
U.S. Cl. 308—241 11 Claims



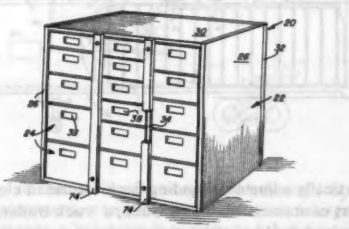
A bearing formed of a base having a bearing surface consisting of coherent pyrolytic silicon carbide which is either soldered or cemented to the base or formed on the base.

3,591,244

PACKING UNIT FOR DISHES

Lawrence Hancock, Jr., 2025 Snyder Ave., Colorado Springs, Colo.

Filed Nov. 27, 1968, Ser. No. 779,366
Int. Cl. E05b *65/46*; A47b *88/00*
U.S. Cl. 312—216 10 Claims



A device to facilitate the moving of dishes or kitchenware that provides a number of drawers therein to receive dishes. The drawers are lined in a resilient shock-absorbing material to cushion the dishes, cups, bowls and glasses placed therein from contact therebetween. The drawers are secured into the device when filled, so that the filled device can be moved as an ordinary piece of furniture.

3,591,245

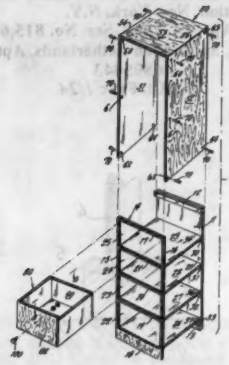
ERECTABLE AND COLLAPSIBLE DRAWER RECEIVING CABINET

George Allen, Strong, Pa., assignor to Cardinal Container Corp., Carmel, Pa.

Filed Sept. 29, 1969, Ser. No. 861,625
Int. Cl. A47b *43/00*, *47/00*
U.S. Cl. 312—258 3 Claims

An erectable and collapsible drawer cabinet having a front frame defining a plurality of drawer receiving openings, a rear wall, horizontal partitions hingedly connected to the rear wall and to the front frame, each partition extending to the lower portion of the drawer receiving opening; the front frame, rear wall and hinged partitions being extendible from collapsed form in which the rear wall is adjacent the front

frame to a position where the partitions are normal to the rear wall and front frame; and a finishing piece comprising



two sidewalls and a top wall and secured to the sides of the rear wall and front frame to rigidify the erected chest.

3,591,246

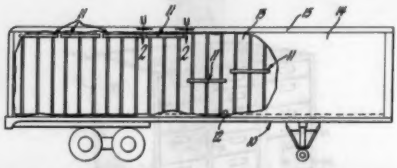
VERTICALLY ADJUSTABLE LOADING DECK FOR TRANSPORT CONTAINERS

Thomas F. Adams, 28334 Ridgebrook Road, Farmington Township, Oakland County, Mich.

Filed Sept. 9, 1968, Ser. No. 758,247

Int. Cl. A47b *57/06*

U.S. Cl. 312—306 **28 Claims**



A vertically adjustable loading deck for use in closed cargo transport containers such as a truck, a truck trailer, or a railroad car and the like, or in stationary storage containers, and which is adapted to be adjusted to a selected loading position spaced downward from the roof of a closed cargo container and secured in place to provide a second loading platform spaced upwardly from the usual container fixed loading deck, and which is movable in a quick and easy manner by a single operator.

3,591,247

CABINET HINGE

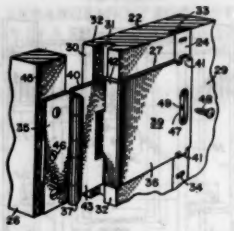
Hammond A. Berry, Spring Lake, and Michael J. Duly, Muskegon, both of, Mich., assignors to E. H. Sheldon & Company, Muskegon, Mich.

Filed Dec. 23, 1968, Ser. No. 785,985

Int. Cl. A47b *96/00*

U.S. Cl. 312—324 **6 Claims**

A cabinet hinge for quickly and removably attaching a door to a cabinet without defacing or marring the cabinet. The hinge includes a first hinge leaf attached to the door and a second hinge leaf attached to the wall of the cabinet. The second leaf includes a generally planar rearward portion which lies against the side of the cabinet wall and provides a pair of attaching tabs which are inserted into perforated shelf-support strips carried by the wall. The forward portion of the second hinge leaf is generally L-shaped and includes an intermediate portion which lies against the front of the



cabinet wall. The front of the wall is provided with a vertically extending slot, and a rearwardly extending projection on the forward portion is received by the slot.

3,591,248

UNIFORM LIGHT TRANSMITTING, INFRARED ABSORBING AND REFLECTING MATERIALS AND ARTICLES

Gerard Meunier, Jumet; Lucien Leger, Montigny-le-Tilleul, and Jose Lelong, Givry, all of, Belgium, assignors to Glaverbel S. A., Watermael-Boitsfort, Belgium

Filed Oct. 7, 1969, Ser. No. 866,104

Claims priority, application Luxembourg, Mar. 23, 1965, Oct. 21, 1965, Nov. 11, 1965, 48,240;49,672;49,816

Int. Cl. G02b *5/20*

U.S. Cl. 350—1 **26 Claims**

A light-transmitting article composed of a layer of transparent material having radiant heat-absorbing properties and arranged to be exposed to a principal source of heat radiation, and a protective layer of transparent material disposed adjacent that surface of the first-mentioned layer which is to face the principal source of heat radiation and capable of at least temporarily reflecting at least a portion of the radiant heat from such source which the first-mentioned layer is capable of absorbing so as to protect the article from damage due to excessive heat absorption.

3,591,249

OPTICAL SCANNING DISPOSITION

Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.

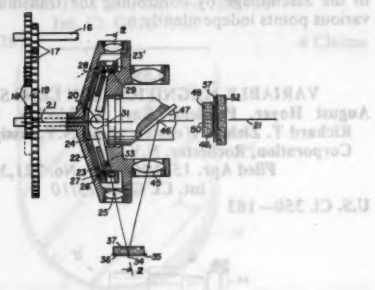
Filed Jan. 24, 1969, Ser. No. 793,851

Int. Cl. G02b *17/00*

U.S. Cl. 350—6 **8 Claims**

This optical scanning disposition for scanning different characters, that are uniformly spaced in a line, lights the entire area of a single character simultaneously and displaces the lighted area along a line in a way that avoids simultaneous illumination of two adjacent characters. A lighted character is then compared with all the characters used.

Scanning is done either stepwise, the lighted area stopping for an instant at each character; or sufficient space is provided between adjacent characters that the lighted area does not reach two characters simultaneously as it moves uniformly along said line.

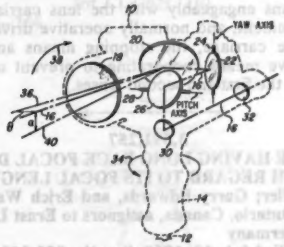


3,591,250

MECHANICAL IMAGE MOTION STABILIZER WITH ROTATION RATE COMPARISON SYSTEM

Herbert William Feinstein, Lexington, and Edward Paul Morse, Norwood, both of, Mass., assignors to Stek Corporation, Lexington, Mass.

Filed Apr. 8, 1968, Ser. No. 719,658
Int. Cl. G02b *23/00*
U.S. Cl. 350—16 **6 Claims**



Apparatus is disclosed for stabilizing image motion in optical instruments due to instrument motions normal to the line of sight by driving reflection means in the optical path of the instrument to compensate for image motion normal to the line of sight in response to rotations of the instrument about axes normal to the line of sight.

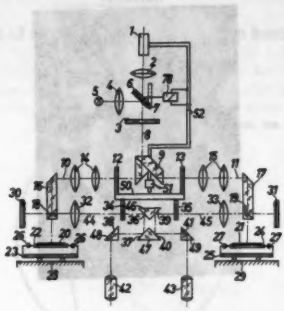
3,591,251

DIAPHRAGM EQUIPMENT IN OPTICAL INSTRUMENTS

Peter Blankenburg, Dresden, Germany, assignor to VEB Carl Zeiss Jena, Jena, Gera, Germany

Filed Apr. 30, 1969, Ser. No. 820,679
Int. Cl. G02b *27/22*
U.S. Cl. 350—17 **1 Claim**

An optical instrument, particularly for stereoscopical point marking, comprises an optical system for directing the point-marking radiation from at least one radiation source to at least two objects which it is desired to mark with homologous points, and an optical system for the stereoscopic observation of the objects and the adjustment of the homologous points. Both systems have optical elements in common, at least near the objects. A diaphragm system which can be interposed in the stereoscopical observation ray-path prevents marking radiation from entering the observer's eye. Each marking ray-path includes also a diaphragm which, when considered necessary, can be so coupled to said diaphragm system as to mask one of the two marking ray-paths.

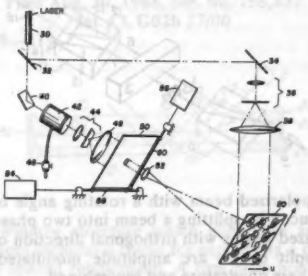


3,591,252

LARGE ARRAY SYNTHESIZING

Sun Lu, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 21, 1968, Ser. No. 769,103
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**



An array of similar images may be synthesized by holographic reconstruction techniques. To produce a large array of similar images, a hologram is constructed that contains the spatial frequency spectrum of the desired array. This frequency spectrum may be generated by usual holographic procedures wherein an object wave and a reference wave are made to interfere on an energy sensitive surface. Since the information contained on the hologram represents an array of points which synthesizes the spatial frequency spectrum, the hologram must be produced by sequentially exposing the energy sensitive surface to a series of interference patterns. To control the amplitude and phase distribution of each point representing the spatial frequency spectrum, both the exposure time and phase displacement between the interfering beams are uniquely determined from a mathematical model of the spatial frequency spectrum.

3,591,253

REAR PROJECTION SCREEN

James J. De Palma, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1969, Ser. No. 838,716
Int. Cl. G03b *21/60*
U.S. Cl. 350—126 **10 Claims**

A rear projection screen comprising a sheet of polymeric material, the sheet being of sufficient thickness to be self-supporting and having improved optical characteristics. More

specifically, the sheet of material is preferably made from the polyolefins, for example, polyethylene or polypropylene, that

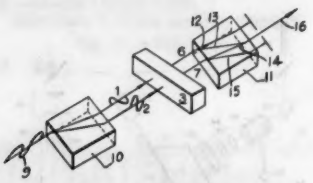
has been prepared in such a way so as to have a generally crystalline structure.

3,591,254

APPARATUS FOR PRODUCING A PLANE POLARIZED BEAM WITH A ROTATING PLANE OF POLARIZATION

Arthur Browne, Horley, Surrey, and John Siegfried Palfreeman, Betchworth, both of, England, assignors to U. S. Philips Corporation

Filed Mar. 17, 1969, Ser. No. 807,882
Claims priority, application Great Britain, Mar. 18, 1968,
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 **7 Claims**



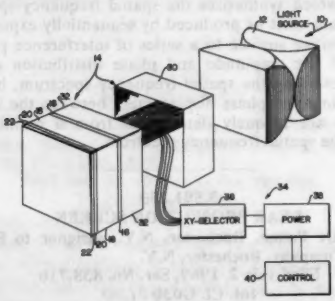
A plane polarized beam with a rotating angle of polarization is produced by splitting a beam into two phase coherent plane polarized beams with orthogonal direction of polarization. The split beams are amplitude modulated with envelopes in phase quadrature and recombined.

3,591,255

FIBER OPTIC BUNDLE ELECTRO-OPTICAL IMAGE CONVERTER

Richard S. Ploss, Danvers, Mass., assignor to Baird-Atomic, Inc., Cambridge, Mass.

Filed Dec. 17, 1968, Ser. No. 784,322
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **4 Claims**



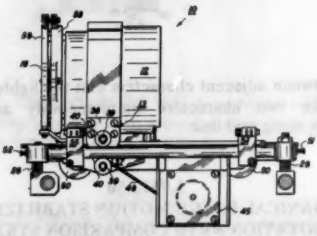
An optical image is presented in terms of visible light directed through contiguous light pipes to a Pockels effect plate disposed between a polarizer and an analyzer. Each of the light pipes is coated with a conducting metal so that each point on the Pockels effect plate can be controlled by a potential that is locally applied in such a way as to control transmissivity. In consequence, image information is applied to the assemblage by controlling the transmissivities of the various points independently.

3,591,256

VARIABLE MAGNIFICATION LENS SYSTEM

August Hoyer, Penfield; Karl E. Liechty, Pittsford, and Richard T. Ziehm, Webster, all of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Apr. 15, 1968, Ser. No. 721,333
Int. Cl. G02b *15/10*
U.S. Cl. 350—183 **6 Claims**



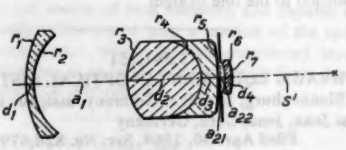
Lens system including a first lens supported by a movable carriage for displacement along the system optical path to vary the size of the image projected by the first lens, a second lens rotatably supported on the carriage, link means for moving the second lens into the optical path on displacement of the carriage and the first lens to restore first lens focus, stopping means engageably with the lens carriage to limit carriage movement; and normally operative drive means for displacing the carriage, the stopping means and normally operative drive means cooperating to prevent unwarranted movement of the first and second lenses.

3,591,257

OBJECTIVE HAVING LONG BACK FOCAL DISTANCE WITH REGARD TO ITS FOCAL LENGTH

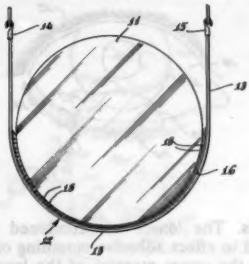
Walter Mandler; Garry Edwards, and Erich Wagner, all of Midland, Ontario, Canada, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed July 13, 1969, Ser. No. 833,063
Claims priority, application Germany, June 15, 1968, P 17 72 665.7
Int. Cl. G02b *9/62*
U.S. Cl. 350—215 **6 Claims**



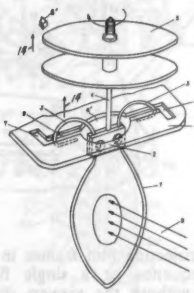
A photographic objective having a relatively long back focal distance with regard to its focal length and also having a great relative opening comprising in combination in front of the diaphragm a negative lens group comprising at least one component lens and spaced therefrom a preferably cemented positive lens element which comprises at least two component lenses having opposite refractive power. Behind the diaphragm a negative lens group is disposed which comprises at least one component lens.

3,591,258
OPTICAL ELEMENT MOUNT
Morley S. Lipsett, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Oct. 11, 1968, Ser. No. 766,710
Int. Cl. G02b 7/02
U.S. Cl. 350—257 4 Claims



Shear stresses between an optical element and its supporting mount are substantially eliminated by providing a mount in which a plurality of springlike elements extending upward from the supporting structure form a seat for the optical element and prevent surface contact between the optical element and the supporting structure.

3,591,259
RADIATION ATTENUATOR FOR CALIBRATION
Werner Schaefer, Kelkheim; Hubert Wenzel, Frankfurt am Main, and Kurt Moldenbauer, Ober-Erlenbach, all of, Germany, assignors to Hartmann & Braun Aktiengesellschaft, Franfurt am Main, Germany
Filed Oct. 24, 1968, Ser. No. 770,271
Int. Cl. G02f 1/30
U.S. Cl. 350—266 9 Claims

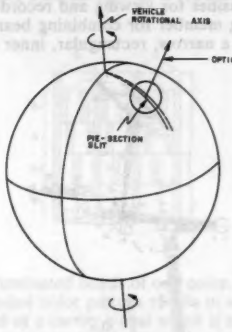


An attenuator for adjustment of photometers wherein interceptors are caused to periodically traverse a bundle of rays and beams at relatively high speed. Means are provided for constraining the interceptor means to move and be held in nonintercepting position when the traverse movement is discontinued.

3,591,260
CONSTANT TIME RESPONSE SCANNER
Daniel C. Harrington, Fridley, and Robert L. Lillestrand, Edina, both of, Minn., assignors to Control Data Corporation, Minneapolis, Minn.
Filed June 26, 1968, Ser. No. 740,377
Int. Cl. G02f 1/30
U.S. Cl. 350—274 14 Claims

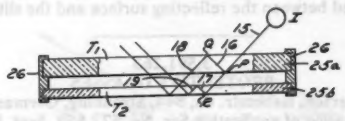
The invention relates to an optical scanning system with a rotating disc having slits fabricated so that the signal produced during scanning has a constant time response. More particularly, the widths, of the slits are governed by the general formula:

where ω= slit width
Φ= distance of a point along the slit from the axis of rotation
θ= the angle of a point along the slit from a horizontal axis



Pie-section slits, Archimedes spirals, logarithmic spirals, involutes, constant width slits and others can be constructed to satisfy this general formula.

3,591,261
GLASS WINDOW STRUCTURE PROVIDING REDUCTION OF INTERFERENCE FRINGES
James E. Harvey, Dearborn Heights; Max J. Irland, Dearborn, and Victor L. Lindberg, Northville, all of, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 30, 1968, Ser. No. 756,437
Int. Cl. G02b 27/00
U.S. Cl. 350—319 3 Claims

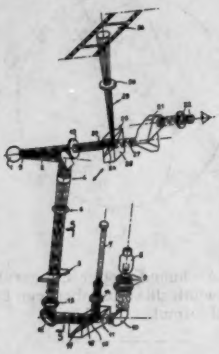


A glass window structure which eliminates Jamin interference fringes includes a frame for supporting a pair of glass brackets in spaced relationship. A first glass bracket is supported in the frame and this bracket is cut from a glass ribbon manufactured in a process wherein molten glass is flowed out upon a molten bath and processed thereon so that the glass ribbon is of substantially uniform thickness. A second glass bracket is also supported in the frame and this second bracket is cut from a glass ribbon manufactured in the same manner as the first bracket. The second bracket is of slightly different thickness than the first glass bracket, and the difference in thickness eliminates the Jamin fringes. Other window structures which eliminate the Jamin fringes are structures in which (1) at least one of the glass brackets has a tapering thickness from one side to the other side, (2) both brackets have similar tapering thicknesses with the thicker edges of the two brackets not being positioned on the same side of the frame, or (3) both brackets have different tapering thicknesses with the thicker edges being positioned in any manner.

3,591,262
OPTICAL APPARATUS FOR REGULATING THE COMBINATION AND SEPARATION OF REFLECTED LUMINOUS BEAMS
Paul Frederic Marie Gambs, 140, rue Maznod, Lyon, 2e (Rhone), France
Filed Jan. 30, 1969, Ser. No. 795,200
Claims priority, application France, Mar. 13, 1968, 49,761
Int. Cl. A61b 3/10
U.S. Cl. 351—14 10 Claims

An optical system for combining or dividing two light beams for constant illumination of an image for observation and for instantaneous illumination for its photographic

recording, excludes a reflecting member at the intersection of the beams. The system is of particular value in an ocular biomicroscope to combine beams from a flashing light source with that from a constant light source to provide a flat beam projected into the eye forming an image of a slit. The system also separates the beam from the image into two beams of appropriate intensities for viewing and recording respectively. The reflecting member for combining beams is a rectangular prism with a narrow, rectangular, inner totally reflecting inclined surface engaging only a part of the nonreflected beam. The reflecting surface for separating two beams is of elliptical shape. A partially reflecting surface in the prism can be moved into position replacing the totally reflecting surface and engaging the whole beam. The composite beam is a central flat beam from the flashing source and a beam separated into two lateral beams from the constant source, fused accurately in the slit image by the objective. A collecting lens is interposed between the reflecting surface and the slit.

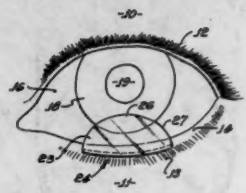


3,591,263
PROTECTIVE GLASSES
Kurt Esterson, Rabenstr. 4a, 844, Straubing, Germany
Continuation of application Ser. No. 577,859, Sept. 8, 1966, now abandoned. This application Jan. 8, 1970, Ser. No. 3,562
Claims priority, application Germany, Oct. 1, 1965, E30189
Int. Cl. G02c 7/10
U.S. Cl. 351—44 **3 Claims**

Protective glasses for reducing glare and providing enhanced vision under unfavorable conditions, the improvement consisting of making the two lenses of different colors, one of orange to reddish and the other of yellow tint.

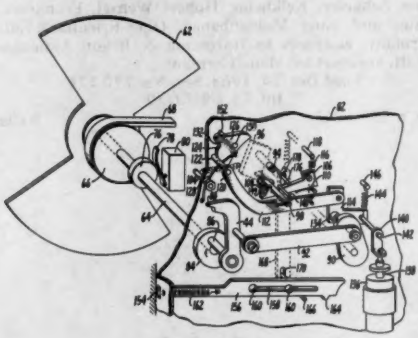
3,591,264
READING LENSES ADHESIVELY ATTACHED TO LOWER EYELIDS
Robert L. Forrest, 10911 Hunting Horn Drive, Santa Ana, Calif., and Rush T. Hilborn, 433 Via Lido Soud, Newport Beach, Calif.
Filed May 16, 1969, Ser. No. 825,341
Int. Cl. G02c 7/02, 7/04
U.S. Cl. 351—159 **3 Claims**

The disclosure relates to lenses adapted to be used for reading and similar close-vision purposes by individuals having defective vision, namely, presbyopia or other refractive error. The lenses are sufficiently small that when they are mounted on the lower eyelids, out of contact with the corneas, the wearer may look over the tops of the lenses at



distant objects. The lenses are combined with mounting means adapted to effect adhesive mounting of the lower lens portions onto the upper margins of the lower eyelids. The disclosure further relates to a method of mounting such lenses before the eyes of persons having defective vision.

3,591,265
AUDIO-VISUAL PROJECTION DEVICE
Frank B. Shropshire, 1623 Josselyn Canyon Road, Monterey, Calif.
Filed Apr. 18, 1968, Ser. No. 722,316
Int. Cl. G03b 31/00
U.S. Cl. 352—17 **4 Claims**

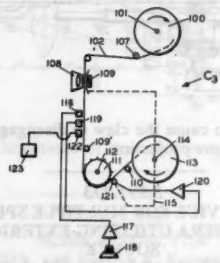


Apparatus for projecting film frames in customary rapid motion picture sequence or a single film frame for a protracted period without the viewers discerning the difference. A film advancing claw operates in synchronization with a continuously running shutter but is moved in and out of engagement with the film in response to signal producing pulses preferably located on a magnetic tape which serves also as the soundtrack on a parallel track, for the film. During scenes not involving motion the claw is disengaged from the film and the same film frame is repeatedly projected. Continued rotation of the shutter maintains the same level of illumination, cooling and the illusion that a "moving" picture is being viewed.

3,591,266
AUTOMATICALLY SYNCHRONIZED VISUAL AND SOUND RECORDING AND PRESENTATION SYSTEM
Walter A. Ried, Creswood, Mo., assignor to John W. Higginbotham, St. Louis, Mo., a part interest
Filed Oct. 8, 1969, Ser. No. 864,633
Int. Cl. G03b 31/32
U.S. Cl. 352—27 **13 Claims**

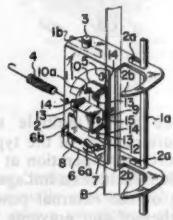
A system for recording sound on a synchronous time basis with respect to a visual image and automatically reproducing the sound and the visual image on a synchronous time basis. In one embodiment of the invention, a camera employs a

magnetic drum which is operatively connected to the shutter mechanism of the camera. The drum serves as a mechanical delay mechanism for temporarily retaining the sound until the film has advanced to a point where the sound can be recorded on a film tract in synchronous time relationship to exposure of visual images on a film. After the message has been recorded on the film, an erase mechanism removes the message so that an unrecorded portion of the drum is moved



into a position for receipt of a new sound message. A projector capable of presenting the film sound and visual image on a synchronous time basis also employs a magnetic drum as a mechanical delay mechanism. Another embodiment of the invention provides a magnetic belt system which replaces the drum as a mechanical delay mechanism. In addition, a third embodiment where the film itself serves as a delay mechanism is also provided.

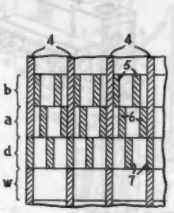
3,591,267
SOUND HEAD POSITIONING DEVICE FOR SMALL-SIZED CINEPROJECTOR
Tokusaburo Kakiuchi, and Hideaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 15, 1969, Ser. No. 841,797
Claims priority, application Japan, July 15, 1968, 43/49766
Int. Cl. G03b *31/02*
U.S. Cl. 352—29 **4 Claims**



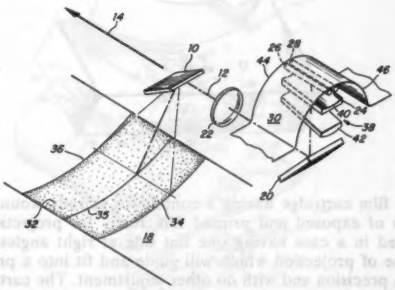
A sound head positioning device having a baseplate on which a sound head is mounted and being biased into a first position by a spring. A film cartridge is inserted to abut and rotate the baseplate to a second position from where the baseplate is slidable to move the sound head into contact with the film. Lateral and vertical adjustments for the sound head are provided.

3,591,268
METHOD AND APPARATUS FOR OPTICALLY RECORDING COLOR PICTURE INFORMATION
Denis Manktelow Neale, Ilford, England, assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Apr. 12, 1968, Ser. No. 720,824
Claims priority, application Great Britain, Apr. 17, 1967, 17540/67
Int. Cl. H04n *1/46*
U.S. Cl. 352—45 **18 Claims**

A method and apparatus for recording as a video signal color picture information for reproduction by television scanning techniques, in which a photographic film is exposed with an image of an original scene in one frame area of the film, and in another frame area with the same image as modified by a banded color filter and objective lens. The latter image passes through a cylindrically lenticular screen close to and in front of the image plane of the objective lens to form bands of colored light in a repeating pattern interrupted by unilluminated bands of one color. Exposure of the film by the banded color pattern results in a record approximating a record of a carrier signal which is modulated in amplitude and phase according to the color saturation and hue of the original scene. The unilluminated bands form on the film a record of a pilot carrier signal at one-half the frequency of the color carrier signal.



3,591,269
CONICAL SCAN PANORAMIC CAMERA
John T. Watson, Wellesley Hills, and Kenneth Robinson, Needham, both of, Mass., assignors to Itek Corporation, Lexington, Mass.
Filed July 30, 1968, Ser. No. 748,674
Int. Cl. G03b *37/00*
U.S. Cl. 352—69 **9 Claims**

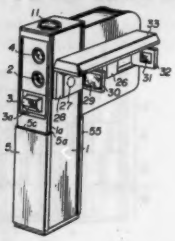


A panoramic camera for obtaining an oblique scan of a photographed area, such an oblique scan being useful when a stereo view of the area is desired. The panoramic camera obliquely scans the photographed area with a conical pattern by rotating the optical scanner about a scan axis parallel to the photographed area. Front to back lateral distortion of the photographed image is compensated for by directing the image through a lens system having a constant image magnification gradient between the forward and rear edges of the film.

3,591,270
MOVIE CAMERA
Takehiko Takahashi, Tokyo, Japan, assignor to Sankyo Kogaku Kogyo Kabushiki Kaisha, Nagano-ken, Japan
Filed May 15, 1969, Ser. No. 824,969
Int. Cl. G03b *17/26, 17/04*
U.S. Cl. 352—72 **4 Claims**

A movie camera having a vertically elongated camera body formed in its rear wall with an opening for inserting a film cassette, so that no film housing or film cassette housing is formed in the camera body. The movie camera also has a finder supporter pivotally mounted on one side of the camera

body and supporting a coupling mechanism for operatively connecting a film takeup shaft of the film cassette inserted in



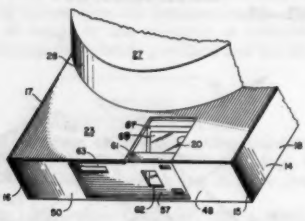
the opening in the camera body to shutter means and film-advance means built in the camera body, whereby the film takeup shaft can be operated.

3,591,271

FILM CARTRIDGE

Frank B. Shropshire, 1623 Josselyn Canyon Road, Monterey, Calif.

Filed Apr. 18, 1968, Ser. No. 722,443
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 3 Claims



A film cartridge having a continuous spirally wound loose loop of exposed and printed film ready for projection, enclosed in a case having one flat side at right angles to the plane of projection which will guide and fit into a projector with precision and with no other adjustment. The cartridge is so structured that when placed within the projector the claw mechanism of the projector will engage the conventional perforations of the film to advance the same one frame at a time, either at motion picture speed or at a controlled single frame advancement. Each cartridge has a part of the projecting system, i.e., a self-contained mirror integral with and movable with the film platen, by which the projection light is gathered and directed through the film and into the optical system. The operation includes the unwinding of the film loop from the outside of the spiral loop for projection and simultaneously rewinding the film on the inside of the loop without any pull or drag on the film.

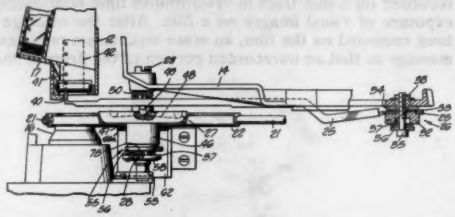
3,591,272

MOTION PICTURE PROJECTOR HAVING CAM APPARATUS ENABLING STOP FRAME PROJECTION

Carter K. Reh, Santa Ana, Calif., assignor to Technicolor, Inc., Hollywood, Calif.

Filed May 23, 1969, Ser. No. 827,341
Int. Cl. G03b *21/38, 1/22*
U.S. Cl. 352—169 12 Claims

A motion picture projector including a conventional optical system and an improved claw mechanism for moving and projecting film frames. The claw mechanism is operated in a substantially conventional manner from a motor to periodically engage perforations in the film to the advance the same. A selectively operable cam mechanism is associated with the



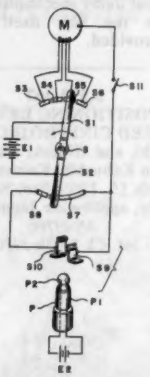
claw mechanism to cause the claw to disengage from the film to provide stop frame projection.

3,591,273

INTERLOCK DEVICE FOR MULTIPLE SPEED MOTION PICTURE CAMERA UTILIZING EXTERIOR POWER SOURCE

Hiroshi Hirata, and Yoshihisa Hayashi, both of Sakai-shi, Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 20, 1969, Ser. No. 801,076
Claims priority, application Japan, Feb. 26, 1968, 43/12078
Int. Cl. G03b *19/18*
U.S. Cl. 352—180 4 Claims



An interlock device for a multiple speed electrically operated motion picture camera of the type which requires an external power source for operation at its highest speed. The speed change switch includes a linkage which senses the presence of the plug of the external power source in the receptacle provided thereof and prevents the setting of the switch at the highest speed when the external power source is not connected.

3,591,274

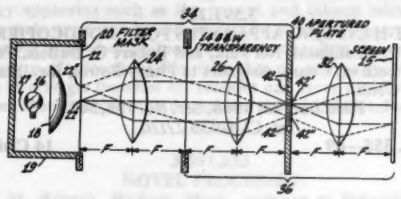
PROJECTION OF COLOR-CODED B AND W TRANSPARENCIES

Philip Joseph Donald, Woodbury, N.J., assignor to RCA Corporation

Filed May 27, 1969, Ser. No. 828,261
Int. Cl. G03b *21/14*
U.S. Cl. 353—20 5 Claims

A system including a light source and lens means for projecting a color image from a black and white transparency on which the image is diffraction-grating coded in different directions for respective different colors. In addition to the lens means, the system includes between the light source and the utilization plane, in the order named, a filter mask, a color-coded, black and white transparency and an apertured plate. The lens means is constructed to image the filter mask at the apertured plate, and to image the transparency at the utilization plane. The filter mask includes many colored filter strips, the filter strips being related, dimensioned and

oriented with reference to the apertured plate, so that the light passing through each of the plurality of apertures contributes to the brightness of the color image at the utilization plane.

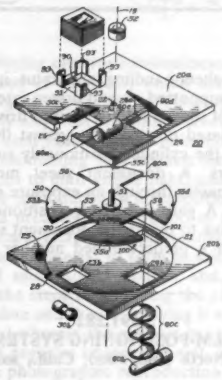


3,591,275

SLIDE PROJECTOR

Frank C. Badalich, and George F. Krtous, both of Chicago, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed June 10, 1968, Ser. No. 735,730
Int. Cl. G03b 21/00, 23/00
U.S. Cl. 353—21 8 Claims



A slide projector having a previewing feature and having provision for sequentially moving each slide from a previewing stage directly into a projection stage. A slide received into the projector is first previewed, reoriented if necessary, returned to the projector at the preview station, and then transported within the projector to the projection station. After projection, the slide is removed from the projector at a removal station.

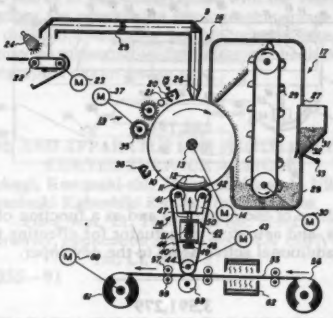
3,591,276

METHOD AND APPARATUS FOR OFFSET XEROGRAPHIC REPRODUCTION

John F. Byrne, Worthington, Ohio, assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 30, 1967, Ser. No. 686,930
Int. Cl. G03g 15/00, 13/14
U.S. Cl. 355—3 14 Claims

A method and apparatus for transferring a developed xerographic powder image from a photoconductive surface to a final support material such as paper by contacting the powder image with elastomeric material under pressure to encapture the developed powder image due to the deformation of the elastomeric member and then transferring the powder image from the elastomeric member onto a paper support material by heat and pressure. In one example of the invention the elastomeric member is in the form of a belt while in another example of the invention the elastomeric member is formed on a drum surface. The paper support material may be preheated in one case prior to the pressure transfer of the powder image or alternatively heat may be applied simultaneously at the contacting surfaces transferring the powder image from the elastomeric member onto the paper support material.

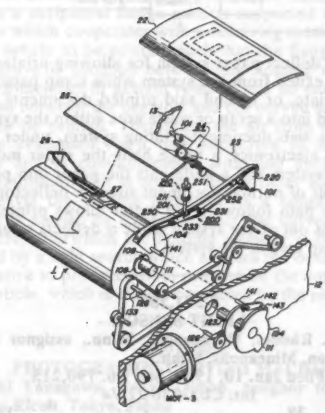


3,591,277

XEROGRAPHIC REPRODUCING APPARATUS

John F. Gardner, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1967, Ser. No. 682,848
Int. Cl. G03g 15/04
U.S. Cl. 355—8 9 Claims



An automatic xerography machine for producing various size copies of an original document which document remains stationary during the process. The machine is characterized by an optical scanning system which can be made to move at various speeds relative to a moving, image receiving surface. A control which operatively couples a scanning mirror and the imaging surface is selectively adjustable in order to vary the relative speed of the mirror and the image receiving surface.

3,591,278

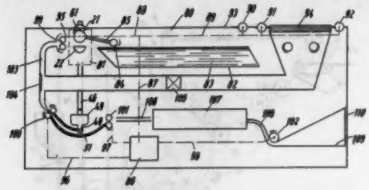
DEVICE FOR SUPPLYING AN ACTIVE DEVELOPING AGENT INTO A DEVELOPING TANK

Walter Limberger, Hamburg-Poppenbuttel, Germany, assignor to Firma Lumoprint Zindler KG, Hamburg, Germany

Filed Nov. 15, 1968, Ser. No. 776,063
Claims priority, application Germany, Nov. 17, 1967, P 15 97 704.5
Int. Cl. G03g 9/04
U.S. Cl. 355—10 13 Claims

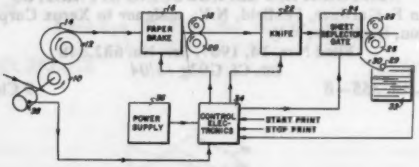
An improved device for supplying an active developing agent to the developing tank of an electrophotographic copy-

ing apparatus as a function of the passage of a sheet through the copier, wherein the improvement comprises a mechanism, adjustable at different speeds by means of the



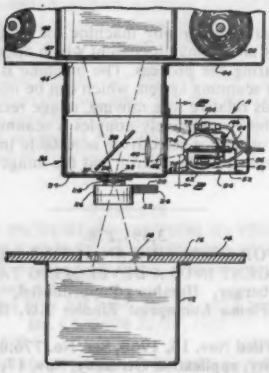
actuating drive of the apparatus and as a function of a copying process, and actuating an actuator for effecting the addition of an additional active agent to the developer.

3,591,279
CUT AND DEFLECT WEB DRIVE APPARATUS
John F. Gardner, Penfield, N.Y., and Michael B. Parry, St. Peter, England, assignors to Xerox Corporation, Rochester, N.Y.
Filed June 22, 1969, Ser. No. 829,623
Int. Cl. G03b *29/00*
U.S. Cl. 355—29 **6 Claims**



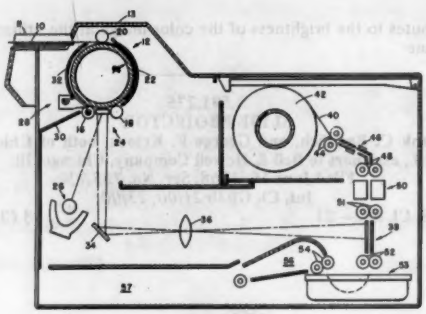
A cut and deflect paper system for allowing printed documents to be exited from the system while scrap paper ahead of, intermediate, or behind said printed documents are cut and deflected into a scrap or waste area within the system. In a continuous web document-printing system, under control of a control electronics, a brake halts the paper movement through the system and a knife cuts the paper into predetermined lengths of normal document sizes. A deflector system in the paper path following the cutter allows printed documents to pass out of the system while it deflects scrap sheets into said scrap area in the system.

3,591,280
LIGHT SENSOR
Geoffrey M. Rhodes, Minneapolis, Minn., assignor to Pako Corporation, Mineapolis, Minn.
Filed Jan. 10, 1969, Ser. No. 790,215
Int. Cl. G03b *27/74*
U.S. Cl. 355—38 **14 Claims**



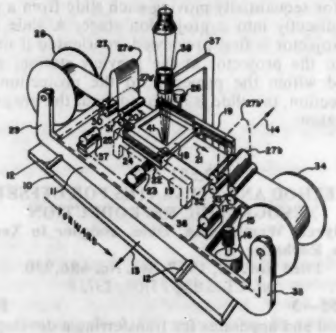
A light-sensing device having a light-integrating chamber, the chamber having a light entrance aperture and light outlet apertures. Photosensitive cells facing the outlet apertures read the integrated light reflected from the interior wall of the chamber.

3,591,281
SHEET-HANDLING APPARATUS FOR PHOTOCOPIERS
Walter P. Kruhlinski, Norwalk, and Robert C. DuBois, Fairfield, both of, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 23, 1968, Ser. No. 786,245
Int. Cl. G03b *27/70*
U.S. Cl. 355—49 **14 Claims**



The disclosed sheet-handling apparatus includes a free-floating cylinder supported on and driven into rotation about its axis by a pair of spaced rollers. A third driven roller above the cylinder is biased downwardly against the cylinder surface to maintain the cylinder positionably supported by the two lower rollers. A document sheet moving with the cylinder surface passes through an exposure station pursuant to copy making. A gate selectively positioned adjacent the cylinder is effective to divert the document sheet away from the cylinder after a predetermined number of copies have been made.

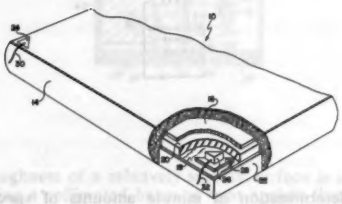
3,591,282
FILM-POSITIONING SYSTEM
Walter Renold, North Hollywood, Calif., assignor to Image Sciences, Inc.
Filed Nov. 17, 1969, Ser. No. 877,376
Int. Cl. G03b *27/44*
U.S. Cl. 355—54 **10 Claims**



A film-positioning system is provided for enabling rapid sequential exposure or readout of film framelets making up a microfiche film frame. Successive framelets are exposed or read out in standard industry step and repeat sequence by moving the microfiche film frame relative to a fixed lens in

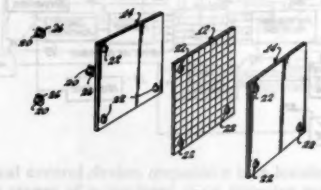
successive incremental steps without having to move major portions of the apparatus. This is accomplished in part by providing first and second storage loops adjacent to opposite ends of the exposure area to accommodate the movement of the film in exposing or reading out a row of framelets. Other bulky apparatus such as the payout and takeup microfiche film reels need not be incrementally moved when exposing rows but only when shifting to a new row all to the end that exposure of microfiche film framelets or, alternatively, location of a single framelet for readout can more rapidly be effected than possible with equipment provided heretofore.

3,591,283
NOVEL PROCESSES
Joel M. Pelsach, Hudson, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 11, 1968, Ser. No. 783,090
Int. Cl. G03b 27/54
U.S. Cl. 355—67 **12 Claims**



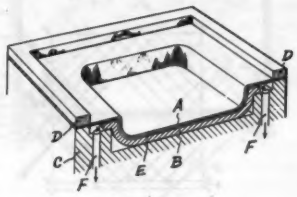
Systems employing electrophotoluminescent panels to obtain reproductions of originals, which systems include the steps of exciting a layer of an electrophotoluminescent material optically and with an applied electric field to cause said material to emit visible light; eliminating said optical excitation while maintaining said electric field, whereby said material continues to emit visible light; and placing the subject matter to be reproduced in juxtaposition with said layer of material for a predetermined period of time sufficient to permit a significant imagewise differential in decay of luminescence of said material to form in said layer a positive reproduction of said subject matter, and, optionally may further include the steps of removing the electric field for a short period of time and then reapplying it whereby to obtain an image reversal wherein the positive image on the panel is converted into a negative image; and systems employing the same to obtain a photographic reproduction on a photosensitive element.

3,591,284
PRINTED CIRCUIT LAYOUT MEANS
Solomon Liebman, 6633 Woodman Ave., Van Nuys, Calif.
Filed May 27, 1968, Ser. No. 732,187
Int. Cl. G03b 27/62
U.S. Cl. 355—75 **7 Claims**



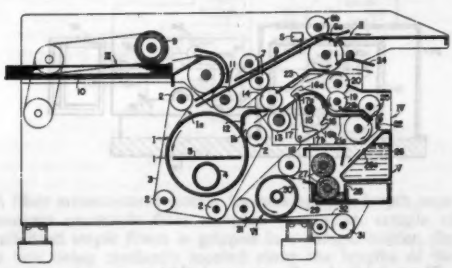
A printed circuit layout assembly is provided including a grid sheet and transparent circuit layout sheets to be placed in face to face contact with opposite sides of the grid sheet so as to permit layout on each layout sheet of a printed circuit diagram defining circuit conductors located in predetermined relation to grid lines on the grid sheet and hence in predetermined relation to circuit conductors of the diagram on the other layout sheet. The sheets are located and retained in registered relation by locating members positioned within aligned preformed locating holes in the sheets and having reference marks to be photographed with the completed circuit diagrams for providing a photographic image or record of each diagram containing reference mark images whose spacing may be measured to determine or check the scale of the photographic circuit image.

3,591,285
METHOD AND APPARATUS FOR PHOTO PRINTING ON CURVED SURFACE ARTICLE
Shige Hakogi, Kawasaki-shi, Japan, assignor to Nihon Kykumen Insatsuki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 11, 1968, Ser. No. 759,137
Claims priority, application Japan, Sept. 13, 1967, 42/58786
Int. Cl. G03b 27/20
U.S. Cl. 355—91 **6 Claims**



A method and apparatus for photo printing on the curved surface of an article, wherein a pliable and transparent negative has a peripheral flange portion supported by a holding member which cooperates with a receiving member supporting the article to be printed, such that the flange portion of the negative is clamped between the holding member and receiving member in airtight relation and an enclosed space is formed between the negative and the curved surface of the article to be printed. Thereafter, the air from the enclosed space is evacuated via a tube supported in the receiving member and in communication with said enclosed space, while atmospheric air is applied to the outer surface of the negative via the holding member. As a consequence, the negative is caused by closely contact the curved surface of the article, afterwhich the holding member is removed and replaced by a light source which exposes the outer surface of the negative to produce photo printing on the curved surface of the article, which is closely contacted by the negative.

3,591,286
PHOTOGRAPHIC COPYING MACHINE
Nobuyuki Yanagawa, Tokyo, Japan, assignor to Rabushiki Kaisha Ricoh, Tokyo, Japan
Filed Jan. 31, 1968, Ser. No. 702,096
Claims priority, application Japan, Feb. 7, 1967, 42/10195
Int. Cl. G03b 27/30
U.S. Cl. 355—106 **1 Claim**



An original document if fed rearwardly into an inlet slot near the top of a copying machine, where it is lapped with a

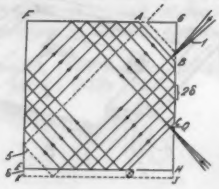
printing paper sheet fed toward the front of the machine from a stock, and the lapped papers are fed downwardly, around an exposure drum centrally located in the machine, and upwardly into a separator, from which the original emerges in the front of the machine below the inlet slot. The printing paper sheet is fed downward and rearward through a developing section, when it passes around a drying roller and is fed forward out of the machine at the bottom of the front face thereof.

3,591,287

ABSORPTION SPECTROPHOTOMETRY

Rodney George Hannis, Reading, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 9, 1969, Ser. No. 831,469
Claims priority, application Great Britain, June 20, 1968, 29578/68
Int. Cl. G01n *21/34*; G01j *3/00*; G01n *21/16*
U.S. Cl. 356—51 **9 Claims**



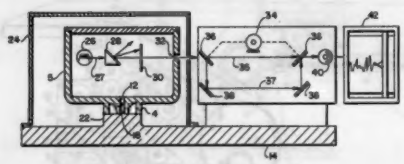
Optical apparatus for use with an infrared spectrophotometer for attenuated total reflectance measurements of solid samples and, in particular, microgramme size samples includes an optical prism, bounded by plane and/or curved lateral faces, for internally reflecting a focused beam of infrared radiation incident substantially normal to a lateral face of the prism, the lateral faces of the prism being relatively disposed such that the beam is reflected by successive total internal reflections and describes a plurality of noncoincident cyclic tracks within the prism before being incident at a lateral face at an angle less than the critical angle and emerging from the prism, sample for absorptiometric analysis being applied to at least one reflecting face. The effective path length of the penetrant beam in the sample is substantially increased by generating the cyclic tracks whence the number of reflections per unit reflective face area is multiplied.

3,591,288

TORQUE-ISOLATING MOUNTING STRUCTURE

Roy W. Aday, Jr., La Habra, and Maoyeh Lu, Fullerton, both of, Calif., assignors to Beckman Instruments, Inc.

Filed June 24, 1969, Ser. No. 836,064
Int. Cl. G01j *3/02*; F16m *11/00*
U.S. Cl. 356—74 **2 Claims**



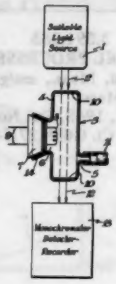
There is disclosed a torque-isolating mounting structure consisting of a pedestal joining member interconnecting and supporting a kinematic optical assembly upon a base member.

3,591,289

ATOMIC ABSORPTION SAMPLE CELL

Helen M. Donega, North Adams, and Thomas E. Burgess, Williamstown, both of, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sept. 24, 1968, Ser. No. 761,975
Int. Cl. G01j *3/30*
U.S. Cl. 356—85 **8 Claims**



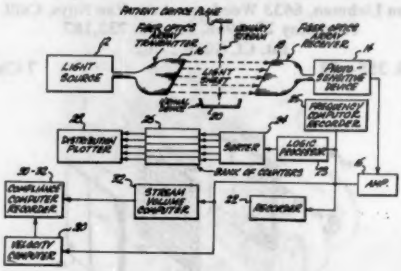
The determination of minute amounts of specific constituents in a specimen is accomplished through atomic absorption analysis in a beam of radiated atomic spectral light. The specimen is in vaporized condition in a controlled atmosphere of a closed region and the beam is passed through the vapor so that selective absorption of the resonance lines of the beam takes place. The specific absorption is then suitably detected and measured.

3,591,290

UROLOGICAL APPARATUS AND METHOD

Norman R. Zinner, Seattle, Wash.; Rogers C. Ritter, Charlottesville, Va., and Donald W. Baker, Bothell, Wash., assignors to The Battelle Development Corporation, Columbus, Ohio

Filed Apr. 4, 1969, Ser. No. 813,591
Int. Cl. G01n *15/02*; A61b *5/10*
U.S. Cl. 356—102 **28 Claims**



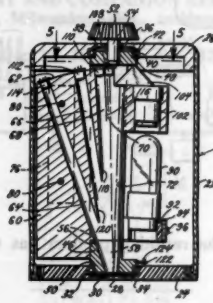
A method and apparatus to analyze urological difficulties by utilizing interaction of variations in the urine stream and a light beam or other field effect to derive electrical signals, e.g. impulses representative of individual drops comprising the stream, analysis of which individually and in groups or patterns provides diagnostic information.

3,591,291

METHOD AND APPARATUS FOR SENSING REFLECTED LIGHT AND DIFFUSED LIGHT FROM A SURFACE TO INDICATE THE ROUGHNESS OF SAID SURFACE

Milton Greer, Ypsilanti; Irvin W. Kay, Ann Arbor, and Kenneth R. Morris, Ann Arbor, all of, Mich., assignors to Conductron Corporation, St. Charles, Mo.

Filed May 26, 1969, Ser. No. 827,599
Int. Cl. G01b 11/30; G01n 21/48, 21/16
U.S. Cl. 356—120 3 Claims



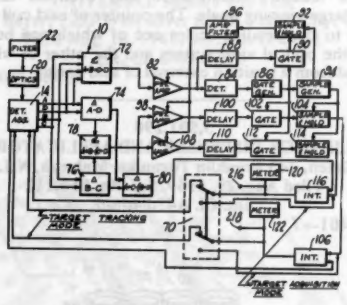
The roughness of a relatively smooth surface is measured by directing a collimated beam of light against that surface, by disposing one light-sensitive element at the angle of reflection, by spacing further light-sensitive elements away from the angle of reflection, and by comparing the signal developed by that one light-sensitive element with the signals developed by those further light-sensitive elements.

3,591,292

OPTICAL CONTROL DEVICE

Wilfred C. Feuchter, Mishawaka, Ind.; Burton L. Lockwood, Mishawaka, Ind.; Clement P. Means, Ann Arbor, Mich.; Marvin Weiss, Ann Arbor, Mich.; Jerome Firuer, deceased, late of South Bend, Ind., and Burton L. Lockwood, administrator, Mishawaka, Ind., assignors to The Bendix Corporation

Filed June 3, 1968, Ser. No. 740,424
Int. Cl. G01b 11/26
U.S. Cl. 356—141 19 Claims



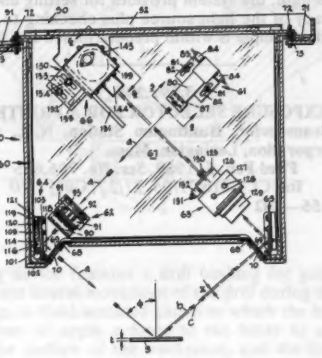
An optical control device responsive to a localized source of light by means of a quadrant array detector means being mounted on an electromagnetic flexure means for controlling the position of said detector means relative to said localized source of light so as to proportion said source of localized light equally in each of said detector quadrants. The device further has electronic closed-loop means responsive to said quadrant array detector means intermediate said quadrant array detector means and said electromagnetic flexure means.

3,591,293

APPARATUS FOR DETERMINING THE THICKNESS OF A TRANSPARENT MATERIAL BY MEASURING THE TIME INTERVAL BETWEEN IMPINGEMENT OF FRONT AND BACK SURFACE REFLECTIONS ON A DETECTOR

Robert E. Maltby, Jr., Perrysburg, and Walter D. McComb, Oregon, both of, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation of application Ser. No. 458,995, May 26, 1965, now abandoned. This application Mar. 19, 1970, Ser. No. 19,543
Int. Cl. G01b 11/02
U.S. Cl. 356—161 11 Claims



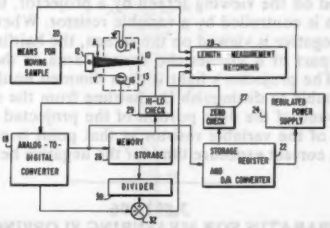
Monitoring physical characteristics such as thickness, index of refraction, width, and position of a moving transparent member having spaced optical surfaces by projecting a restricted beam of light at an angle incident to produce spaced, reflected beams from the optical surfaces, focusing the spaced reflected beams at a point spaced from the member, and successively activating means electrically responsive to the spaced reflected beams to produce corresponding electric signals whose separation in time is indicative of the physical characteristic.

3,591,294

FIBER MEASUREMENT

Hugh G. Neil, Knoxville, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Jan. 31, 1969, Ser. No. 795,521
Int. Cl. G01b 11/04
U.S. Cl. 356—167 26 Claims



A fiber measurement system for making span length measurements on staple fiber samples. A random sample of parallelized staple fibers is gripped in a sample holder, the grip line being randomly located along the lengths of the fibers. The span length, defined as the distance of protrusion from this random grip line of a predetermined fractional part of the fibers in the sample, is determined by scanning the sample with a sensor such as a light source and detector. A

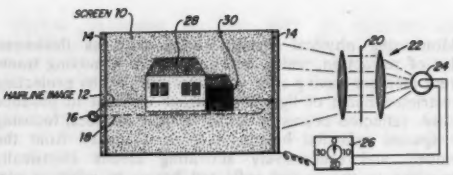
reference measurement is taken with the scan line of the sensor positioned relatively near the grip line so as to be representative of the total number of fibers in the sample. The output of the sensor is a nonlinear function of the number of fibers at the scan line and is linearized by a nonlinear analog-to-digital converter. As the sample is scanned, the output of the analog-to-digital converter is compared to a predetermined fractional part of the reference measurement. During scanning, the relative motion between the sensor and the sample is accumulated. When the comparison indicates that the predetermined fractional part of the sample is at the scan line, the accumulated relative motion is recorded thereby providing the span length of that predetermined fractional part of the sample. In addition to actually measuring the span length, the system provides for setting and checking the accuracy of the light source plus checking to make sure that the fiber sample is within predetermined size limits.

3,591,295

EXPOSURE SELECTOR FOR A PRINTER

Arthur Bransdorfer, Huntington Station, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 5, 1969, Ser. No. 796,675
Int. Cl. G01n *21/06, 21/22;* **G01j** *1/10*
U.S. Cl. 356—202 **2 Claims**



Apparatus for selecting the correct exposure time for each particular negative in a reader-printer. A hairline image which is movable is provided on the viewing screen of the reader-printer, and an image of the negative to be printed is projected on the viewing screen by a projector, the intensity of which is controlled by a variable resistor. When the image of the negative is viewed on the screen, the hairline is moved so that part of it crosses the darkest area of the projected image. The projector's light is then dimmed until the operator is unable to distinguish the hairline from the surrounding background of the dark portion of the projected image. The reading of the variable resistor at that point is calibrated to give the correct exposure time for the negative being printed.

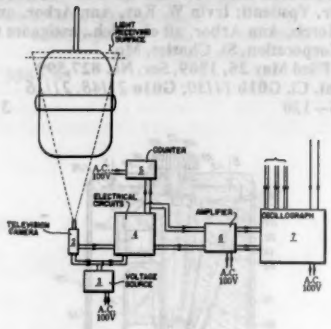
3,591,296

APPARATUS FOR MEASURING SLOPPING AND SPITTING CONDITIONS OF STEEL-MAKING FURNACE

Kenzo Kunioka; Takasji Tada; Ryoichiro Imai, and Seigo Ando, all of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Apr. 12, 1968, Ser. No. 721,565
Claims priority, application Japan, Apr. 13, 1967, 42/23317
Int. Cl. G01j *1/46;* **C21b** *7/00*
U.S. Cl. 356—215 **2 Claims**

During operation of a steel-making furnace, the amount of slopping and spitting is measured by an electrooptical means and the electrical value produced therefrom is integrated and counted to determine a desired standardized operating pattern. This assures improved tapping yield and uniformability



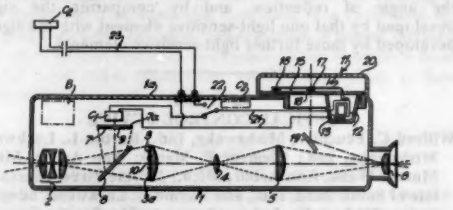
of constituent; the resulting product has uniform characteristics.

3,591,297

PHOTOMETRIC INSTRUMENT

Bo Anders Vilhelm Hagner, 11 Orrvagen, Nasbypark, Sweden

Filed Nov. 6, 1968, Ser. No. 773,735
Claims priority, application Great Britain, Nov. 10, 1967, 51204/67
Int. Cl. G01j *1/42*
U.S. Cl. 356—219 **4 Claims**



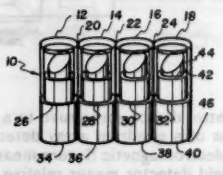
A photometric instrument having two photoelectric cells coupled to a common moving coil meter, one of said cells being arranged within a casing to measure, in conjunction with an optical viewing system, a small viewing angle, and the other of said cells being adapted to be used externally of said casing to measure illumination and eventual luminance within a large viewing angle. The pointer of said coil meter is common to two reading scales one of which can be viewed through the optical view system and the other of which can be viewed from a position external of said casing.

3,591,298

LIPSTICK DISPENSER AND APPLICATOR

Martin Green, 243 Franklin Turnpike, Mahwah, N.J.

Filed Aug. 29, 1969, Ser. No. 854,112
Int. Cl. A45d *40/06*
U.S. Cl. 401—7 **7 Claims**



A lipstick dispenser and applicator having a plurality of integral cylindrical transparent covers placed in juxtaposition for receiving singularly a plurality of unattached cylindrical hollow bases. Each base is open-ended, securing at one open end lipstick of a predetermined color or shade and at the

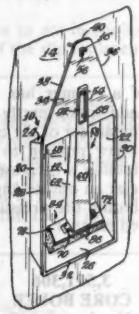
other open end conveniently receiving the pinky finger as a means of supporting the lipstick holder base in its control and application of the lipstick. Furthermore, it includes a separate cover for use as a giveaway of one of the unattached lipstick holders and in addition, it includes a finger ring adapter that is inserted on the pinky finger for support of the lipstick holder.

3,591,299

PAINT TRAY AND COMPANION APPLICATOR

John A. Pharris, Milwaukee, Wis., assignor to E Z Paintr Corporation

Filed Dec. 11, 1968, Ser. No. 782,971
Int. Cl. A46b *11/00*
U.S. Cl. 401—118 **9 Claims**



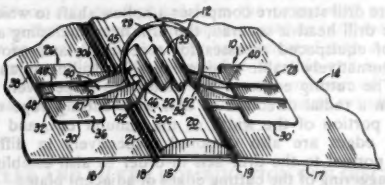
A paint tray and applicator combination, the applicator having a handle and a transversely oriented pad at one end of the handle, the other end of the handle being longitudinally slotted; and the tray having a paint holding portion defined by a bottom, three generally upright walls and one upwardly inclined wall, with a tray handle extending outwardly from the upright wall generally opposite the inclined wall, the tray handle being recessed to nestably receive the applicator handle and having an upstanding pin to impale the slot in the applicator handle.

3,591,300

UNIVERSAL SHEET LIFTER

Lewis R. Beyer, 1255 West River Road, Valley City, Ohio

Filed Aug. 15, 1968, Ser. No. 752,861
Int. Cl. B42f *13/16*
U.S. Cl. 402—80 A **2 Claims**



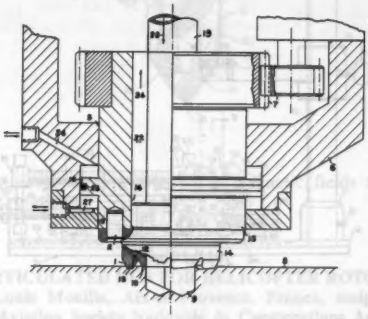
A sheet lifting device for looseleaf ring binders with any number of rings or ring spacing. The lifter has two parts each with a single aperture for receiving a binder ring and flexibly interconnected across the ring to maintain an alignment while permitting pivoting with covers of the binder. Inclined surfaces on the two parts engage portions of sheets carried by the rings and move the sheets about the ring when the binder covers are closed.

3,591,301

DRILLING DEVICE, PARTICULARLY FOR GUN AND ANNULAR DRILLING

Alfred Kaser, Austrasse 15, Rieden, Nussbaumen, Switzerland

Filed June 10, 1968, Ser. No. 735,775
Claims priority, application Switzerland, June 16, 1967, 8705/67
Int. Cl. B23b *47/00, 47/28*
U.S. Cl. 408—56 **2 Claims**



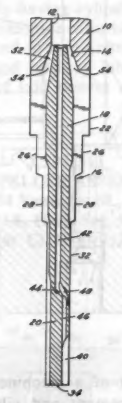
A drilling device features a drill bushing for guiding the drill to prevent lateral movement of the drill during the initial drilling stage. A fluid-actuated piston to which the bushing is secured serves to apply a force to the latter to anchor it firmly on the surface of the workpiece, and the lower end face of the bushing in contact with the workpiece is provided with an integral sealing ring to prevent escape of any of the fluid used for drill cooling, lubricating and flushing. The lower end face of the bushing is provided with a milling cutter to cut a groove into the workpiece until contact is made with the sealing ring, and the piston-bushing structure is driven in rotation by means of a gear drive.

3,591,302

ROTARY TOOL FOR METAL REMOVAL

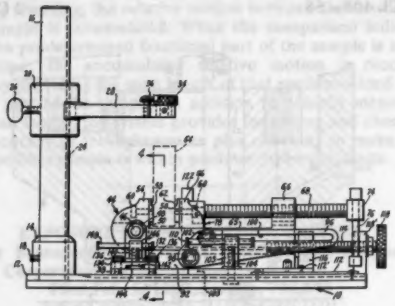
Donald C. Andreasson, Troy, Mich., assignor to Detroit Reamer & Tool Company, Troy, Mich.

Filed May 8, 1969, Ser. No. 823,028
Int. Cl. B23d *77/00;* **B23b** *51/06*
U.S. Cl. 408—59 **3 Claims**



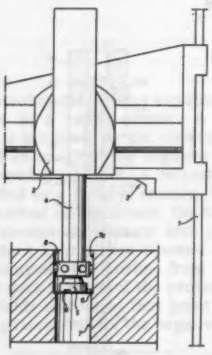
A rotary, one-piece, multiple-diameter, liquid-cooled tool insert for attachment to a rotary driving shank provided with external and internal coolant passages to provide adequate lubrication and coolant liquid to the various diameters including a remote tip, this being furnished with coolant through an internal passage leading to external land grooves at the tip end to supplement coolant flow also supplied through external flutes.

3,591,303
APPARATUS FOR POSITIONING PIANO HAMMERS FOR DRILLING
Fred T. Conway, P.O. Box 701, Pacific Grove, Calif.
Filed Apr. 2, 1969, Ser. No. 812,704
Int. Cl. B23b *47/28*
U.S. Cl. 408—108 3 Claims



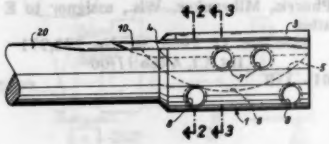
A viselike clamp is adapted to grip the head of a piano hammer and is provided with supporting means so that the hammerhead may be arranged at any desired angle with respect to a stationary drill-supporting means so that the head may be drilled to provide an opening to receive the end of the stem which supports the piano hammer.

3,591,304
DEVICE FOR STIFFENING AND DEADENING VIBRATIONS OF MACHINE-TOOL PARTS
Maso Galbarini, Pavia, and Francesco Cotta Ramusino, Milan, both of, Italy, assignors to Innocenti Societa Generale per L'Industria Metallurgica E Meccanica, Milan, Italy
Filed Sept. 11, 1969, Ser. No. 857,092
Claims priority, application Italy, Sept. 21, 1968, 53,220/68
Int. Cl. B23b *29/03*
U.S. Cl. 408—143 10 Claims



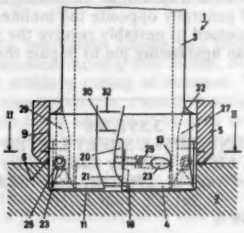
A tool-carrying part of a machine tool is supported to prevent lateral displacement and vibration of the part in operation by a number of support elements which are displaceable radially in unison under the action of fluid pressure to engage a supporting surface of, for example, a workpiece bore. The support elements do not exert a resultant lateral force on the machine tool part, and moreover any lateral displacement or vibration of said part at a speed in excess of a predetermined speed is effectively damped by the reaction of the support elements.

3,591,305
REAMER WITH REPLACEABLE CUTTING BLADE
Johann Aichhorn, Aalen; Erich Rietzler, Sigmaringen, and Dieter Kress, Aalen, all of, Germany, assignors to Mapal Dr. Kress K.G., Aalen, Germany
Filed Apr. 7, 1969, Ser. No. 814,139
Claims priority, application Germany, Apr. 10, 1968, P 17 52 151.6
Int. Cl. B23d *77/00*
U.S. Cl. 408—161 10 Claims



The cutter head of a reamer has a groove shaped for receiving a cutting blade which partly separates an integral jaw portion from the remainder of the cutting head. A clamping screw permits the jaw portion to be tightened on the cutting blade whose mobility is increased by a slot in a plane intersecting the groove at an obtuse angle. Further slots may be provided for distributing the pressure of the jaw portion on the blade in a desired manner.

3,591,306
CORE BORER
Alfred Kaser, Rieden, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland
Filed Jan. 2, 1969, Ser. No. 788,445
Claims priority, application Switzerland, Jan. 12, 1968, 525/68
Int. Cl. B23b *51/04*
U.S. Cl. 408—204 2 Claims

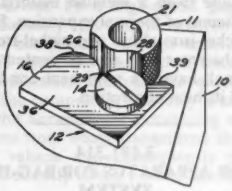


A core drill structure comprises a hollow shaft to which an annular drill head is secured, the drill head including a plurality of equispaced recesses for receiving plates provided with alternatively usable cutting edges for drilling an annular hole. The cutting edges of the plates are respectively staggered in a radial direction so that each cutting edge works only a portion of the width of the annular cut, and these cutting edges are also disposed respectively in different planes normal to the drill axis in order to also establish an axial staggering of the cutting edges of adjacent plates.

3,591,307
DRILL JIG BUSHING LOCKING PLATE
Arthur L. Barnard, Royal Oak, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Filed June 3, 1969, Ser. No. 829,962
Int. Cl. B23b *49/02*
U.S. Cl. 408—241 8 Claims

This disclosure relates to a locking plate which can be utilized with a slip replaceable drill jig bushing and turn it into a

fixed replaceable drill jig bushing by placing a lock plate around the lock screw to act in conjunction with a bayonet-type release system of the slip replaceable drill jig bushing.

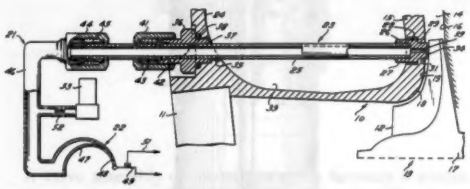


3,591,308

ROTOR GUARD FOR CENTRIFUGAL COMPRESSOR

Ernest W. Blattner, Franklin, Pa., and Arnold M. Heitmann, Swampscott, Mass., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed June 4, 1969, Ser. No. 830,291
Int. Cl. F01b *25/00*
U.S. Cl. 415—9 6 Claims



A safety device to protect a rotor impeller in a centrifugal compressor from damage that might otherwise occur when the impeller, because of some fault, engages an opposed wall of its chamber. The device includes a hollow tubular body supported in the walls of the compressor. It has one end connected with a pressure switch arranged in a power control electrical circuit, and has an opposite abradable thin end projecting into the impeller chamber. The device is pressurized with fluid and, when its thin end is caused to be abraded away by the impeller, the pressure fluid will be dumped, causing actuation of the switch and consequent discontinuance of power to the compressor. The pressure fluid for the device may be supplied from the compressor system or from an external source. In condenser steam turbines, the tubular body of the device may be connected with a vacuum element and arranged so that when the thin end is abraded away the tubular body will become pressurized by the process fluid to cause actuation of the pressure switch.

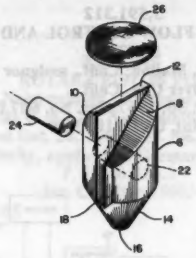
3,591,309

MIXER AND FILTER COMBINATION FOR DISCRETE SIMPLE CONTAINERS

Robert A. Ray, Fullerton, and August Hell, Whittier, both of, Calif., assignors to Beckman Instruments, Inc.

Filed June 30, 1969, Ser. No. 837,695
Int. Cl. B01f *7/00*
U.S. Cl. 416—3 5 Claims

A body member is disclosed which has a shape compatible with a discrete sample container and at least one ramp surface for the purpose of propelling and thereby mixing a fluid in a container as the body is rotated. A filter is attached to one end of the body member for the purpose of intercepting unwanted particles and fibers in the fluid. A magnet is embedded in the body to render the mixing body and filter combination responsive to alternating magnetic fields thereby causing rotation.

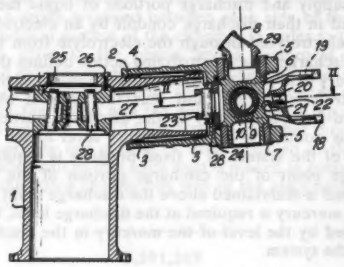


3,591,310

ARTICULATED HUB FOR HELICOPTER ROTOR

Rene Louis Mouille, Aix-en-Provence, France, assignor to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris, France

Filed June 30, 1969, Ser. No. 837,539
Claims priority, application France, July 4, 1968, 157831
Int. Cl. B64c *27/38*
U.S. Cl. 416—107 2 Claims



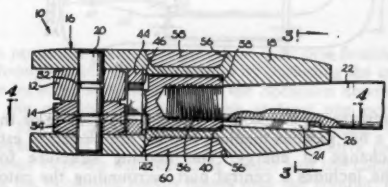
The present invention relates to a hollow, unit-construction mast-hub assembly having cylindrical arms at its top for supporting as many helicopter rotor blades through the medium of sleeves associated to said arms and pivotally mounted thereon, a flapping and lead-lag hinge device being interposed between each of said sleeves and a blade attachment clevis.

3,591,311

PROPELLER ASSEMBLY

Frank W. Butler, 10354 Vanalden St., Northridge, Calif.

Filed Aug. 18, 1969, Ser. No. 850,776
Int. Cl. B63h *1/24*
U.S. Cl. 416—142 1 Claim



A boat propeller having a pair of foldable propelling blades which are connected to the engine drive shaft through a dual-nut assembly comprising a first nut about the drive shaft and a locking nut about the first nut. The foldable propelling

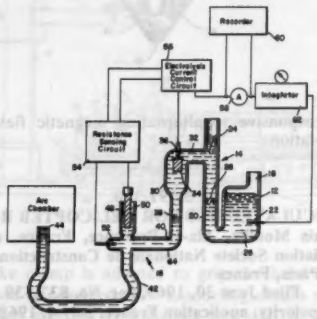
blades are connected to the drive shaft through a bolt which is slidable within a drive shaft sleeve.

3,591,312

LIQUID MERCURY FLOW CONTROL AND MEASURING SYSTEM

Wilfried O. Eckhardt, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 30, 1967, Ser. No. 687,004
Int. Cl. G01f 23/00
U.S. Cl. 417—48 15 Claims



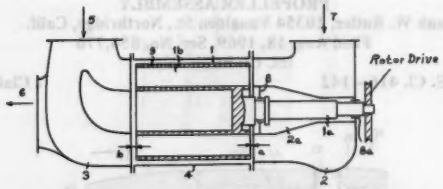
The supply and discharge portions of liquid mercury are separated in their discharge conduit by an electrolyte. Mercury is electrolyzed through the electrolyte from the supply to the discharge. The electrolyzing action defines the amount of mercury delivered to the discharge. Control of the amount of electrolysis current, and thus the amount of mercury delivered from the supply to the discharge portions of this system is controlled by the mercury level in the discharge portion of the system. If a fixed pressure is required at the discharge point of the discharge portion of the system, a fixed head is maintained above the discharge point. If a fixed level of mercury is required at the discharge level, this is also controlled by the level of the mercury in the discharge portion of the system.

3,591,313

PRESSURE WAVE MACHINE

Alfred Wunsch, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 4, 1969, Ser. No. 830,459
Claims priority, application Switzerland, June 20, 1968, 9203/68
Int. Cl. F04b 37/02
U.S. Cl. 417—64 6 Claims



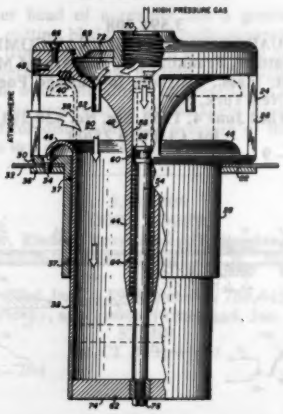
A pressure wave machine includes a celled rotor through which a hot gaseous medium and air are passed to establish an exchange of energy. The housing structure for the machine includes a central part surrounding the rotor and side parts located adjacent the opposite ends of the rotor which serve for the introduction of the hot gaseous medium and air respectively into the cells. In order to maintain an at least approximately constant length of the rotor and central part of the housing structure, and an at least approximately constant clearance gap between the ends of the rotor and the adjacent side parts of the housing structure under all operating conditions and regardless of the temperature of the hot gaseous medium, the rotor and central part of the housing structure are made from a metallic material having a very low means coefficient of thermal expansion. Suitable metallic materials are nickel-iron alloys and nickel-iron-cobalt alloys. The surface of the rotor may also be coated with a material, such as an enamel, having a poor heat conductivity characteristic to retard its heat absorption.

3,591,314

ASPIRATOR APPARATUS FOR BAG-INFLATION SYSTEM

Ronald H. Day, Mill Valley, Calif., assignor to Industrial Covers Inc., San Francisco, Calif. and Sargent Industries, Inc., Los Angeles, Calif.

Filed Feb. 28, 1969, Ser. No. 803,178
Int. Cl. F04f 5/16, 5/48
U.S. Cl. 417—179 15 Claims.



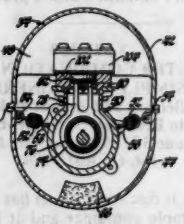
An improved aspirator device for bag-inflation systems and the like which is rotationally symmetrical about the axis of the device and includes an annular atmospheric flow path concentric with one or more rings of aspirating jets to provide a high-efficiency aspirating function. The aspirator includes a single operation closure component which acts to open the atmospheric flow path upon actuation of the device and close the atmospheric flow path when a predetermined pressure has been built up within the inflated device.

3,591,315

RECIPROCAL COMPRESSOR AND ACCUMULATOR FOR AUTOMATIC VEHICLE LEVELING SYSTEM

James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

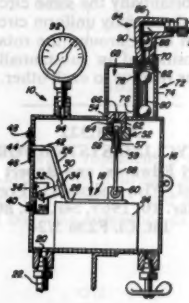
Filed Nov. 26, 1969, Ser. No. 880,072
Int. Cl. F04b 39/00, 35/04
U.S. Cl. 417—363 4 Claims



A reciprocal compressor and accumulator assembly for an automatic vehicle leveling system including auxiliary lift units

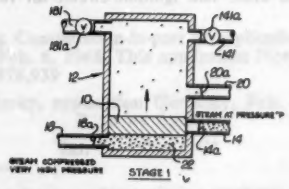
receiving pressurized fluid from the accumulator when the vehicle is loaded and being pumped down by the compressor when the vehicle is unloaded to maintain a constant vehicle suspension height. The compressor is of a low displacement variety and is driven by a high-speed permanent magnet motor at approximately 3,000 r.p.m. whereby combined with the fact that the compressor receives supercharged air from the auxiliary lift units, the pumpdown time is significantly reduced and the electrical drain on the vehicle battery is held to a minimum. The compressor assembly is suspended on coil springs within the accumulator preventing motor and compressor vibrations from being transmitted through the accumulator to the vehicle and consequently the accumulator may be mounted directly to the vehicle chassis.

3,591,316
AUTOMATIC CENTRIFUGAL PUMP PRIMER
Robert J. Piccirilli, 4918 Anntana Ave., Baltimore, Md.
Filed Feb. 26, 1969, Ser. No. 802,410
Int. Cl. F04b *17/00, 35/00, 21/00*
U.S. Cl. 417—364 **1 Claim**



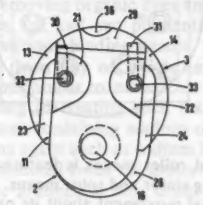
A valve assembly connected in series between a source of vacuum pressure and the intake port of a centrifugal pump. The valve assembly includes a float chamber and float therein for monitoring the passage of fluid through the pump. When the pump ceases to operate upon fluid and requires priming, the float in the float chamber causes communication between the inlet port of the pump and the source of vacuum pressure thereby effecting priming. The present invention further includes an inlet hole in the float chamber which is selectably opened to terminate vacuum in said chamber and allowing air to enter, causing any fluid buildup to be removed by centrifugal pump vacuum, restoring the chamber to ready-prime position automatically. Further, redundant check valve means are provided for insuring the prevention of fluid flow from the float chamber to the vacuum source.

3,591,317
METHOD AND APPARATUS FOR PRESSURIZING STEAM
Glenn D. James, 1200 Encino Ave., Arcadia, Calif.
Filed July 19, 1968, Ser. No. 746,094
Int. Cl. F04b *35/00*
U.S. Cl. 417—392 **12 Claims**



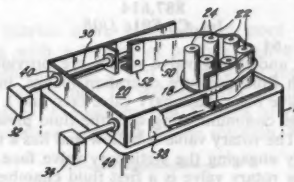
Steam is taken at a generated pressure e.g. from a desalinization system and is altered in pressure for particular purposes e.g. to feed steam powered turbines at a single step or in multiple stages for example dividing a quantity of steam at an intermediate pressure into higher and lower pressure portions.

3,591,318
ROTARY PISTON PUMP
Horst Knapp, Neutraubling, Germany, assignor to Knapp Mikrohydraulik G.m.b.H., Neutraubling, Germany
Filed Oct. 28, 1969, Ser. No. 870,023
Claims priority, application Germany, Oct. 31, 1968
P 18 06 185.3
Int. Cl. F04b *19/02*
U.S. Cl. 417—465 **13 Claims**



A pump having a biarcuate chamber closed by plane parallel walls, an eccentrically driven piston located in the chamber, a guide arranged between each side of the piston and a cylindrical surface of the chamber in order to translate the rotary drive to the piston into a reciprocal motion. Supply and delivery ducts arranged to open into the chamber from one of the plane parallel walls and associated recesses provided in the piston and the guides, whereby liquid to be pumped is supplied to and from a pump chamber through the selected opening and closing of slots provided in the other plane parallel wall so that each duct is placed in communication with the pump chamber by way of the associated recess in the piston.

3,591,319
FLOW CONDUIT PROTECTIVE MEMBER FOR PERISTALTIC PUMP
Theodore Shlisky, Bayside, N.Y., assignor to Scientific Industries, Inc., Hempstead, N.Y.
Filed Mar. 17, 1969, Ser. No. 807,892
Int. Cl. F04b *43/03, 43/12*
U.S. Cl. 417—477 **2 Claims**



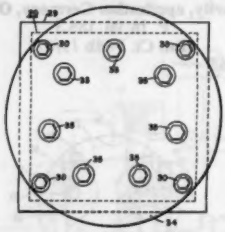
In a peristaltic pump comprising at least one flexible conduit through which fluid is pumped by occluding the conduit at one location and then moving the occlusion downstream along the conduit, and comprising at least one occlusion means for occluding the conduit and for being moved downstream over the conduit, a conduit protective member positioned between the occluding means and the conduit so that as the occluding means moves over the conduit, it rubs the conduit protective member, and not the conduit; the protective member being sufficiently flexible so as not to interfere with the occlusion of the conduit and being formed of material having a low coefficient of friction so as to reduce rubbing between contacting elements.

3,591,320

PRESSURIZED ROLLER MEANS IN A FLUID PRESSURE DEVICE

George V. Woodling, 22077 West Lake Road, Rocky River, Ohio

Filed Apr. 8, 1969, Ser. No. 814,300
Int. Cl. F01c 3/00
U.S. Cl. 418—61 17 Claims



The pressurized roller means is featured in a stator-rotor mechanism having stator and rotor means, the latter of which having a rotational movement about its own axis and an orbital movement about the axis of the stator means. The stator means includes a plurality of cylindrical roller means journaled respectively in a plurality of open journal pockets. A minor cylindrical portion of the respective roller means is exposed through the open pockets. The exposed, minor cylindrical portions constitute internal teeth for the stator means. Upon relative movement between the stator means and the rotor means, the rotor means is disposed to contact the exposed, minor cylindrical portions, whereby they may rotate and thus convert what would otherwise be a sliding contact into a roller contact. A major cylindrical portion of the roller means is held in the respective pockets by a confronting wall which circumferentially embraces a major portion of the pockets. A substantially fluidtight clearance space is provided between the confronting wall and a major portion of the roller means. Pressurized fluid is conducted to this clearance space for fluidically supporting the roller means in the pockets.

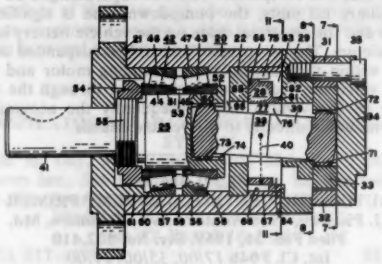
3,591,321

VALVING IN COMBINATION WITH FLUID PRESSURE OPERATING MEANS

George V. Woodling, 22077 West Lake Road, Rocky River, Ohio

Continuation of application Ser. No. 765,107, Oct. 4, 1968, now abandoned. This application Dec. 23, 1969, Ser. No. 887,614
Int. Cl. F01c 1/08
U.S. Cl. 418—61 11 Claims

Stationary and rotary valve means are provided in combination with fluid pressure operation means, in which the stationary valve has a stationary valve face and a plurality of fluid openings communicating with the fluid pressure operation means. The rotary valve is hollow and has a rotary valve face sealingly engaging the stationary valve face. Externally of the hollow rotary valve is a first fluid chamber or gallery and internally of the hollow rotary valve is a second fluid chamber or gallery. First and second alternate series of commutating fluid conduction means respectively extend from the first and second fluid chambers through the rotary valve face with each series commutating with and being one less in number than said plurality of fluid openings. A series of land are circumferentially and respectively disposed between said first and second series. Said lands and said first and second



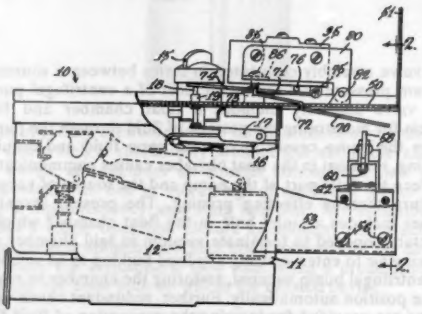
series each have substantially the same circumferential width and are spaced at substantially uniform circumferential intervals relative to each other around the rotary valve face and are respectively positioned in substantially direct opposed diametrical locations relative to each other.

3,591,322

SAFETY RECYCLING SYSTEM FOR A HEATER

Ray Derringer, Port Edwards, and Robert G. Moss, Wisconsin Rapids, both of, Wis., assignors to Preway Inc.

Filed Mar. 10, 1969, Ser. No. 805,471
Int. Cl. F23n 5/24
U.S. Cl. 431—78 4 Claims



A safety recycling system for a fuel-burning heater having an electric ignition circuit and a variable-rate fuel supply controlling valve comprising a safety circuit with a normally energized solenoid which is responsive either to a power failure or to an excessive operating temperature to close the fuel supply valve and open the ignition circuit and further responsive to presence of power and a proper operating temperature to permit reopening of the valve to the previously set rate and close said ignition circuit for refiring of the heater.

CHEMICAL

3,591,323

NEW HAIR DYEING SOLUTION

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, France, assignors to L'Oreal, Paris, France

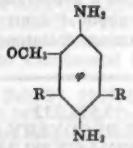
No Drawing. Filed Feb. 7, 1966, Ser. No. 525,291

Claims priority, application France, May 6, 1965, 16,140

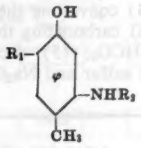
Int. Cl. A61k 7/12

U.S. Cl. 8—11 17 Claims

A composition for dyeing keratinic fibers comprising effective amounts of aromatic paradiamine of the formula



in which R and R' each represent a substance selected from the group consisting of hydrogen and methyl, but R' must be methyl when R is methyl, and meta-amino-phenol which serves as a coupling substance of the formula



in which R_1 represents a substance selected from the group consisting of chlorine and hydrogen and R_2 represents a substance selected from the group consisting of hydrogen, carbamylmethyl and diethyl carbamylmethyl, but R_1 must be chlorine when R_2 is hydrogen, and the method of dyeing hair with this composition.

3,591,324

DYEING POLYAMIDES WITH MONOAZO DYES CONTAINING ACID GROUPS

Johannes Dehnert, Ludwigshafen, Walter Grosch, Mannheim, and Gergard Gnad, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft Ludwigshafen (Rhine), Rhineland-Pfalz, Germany

No Drawing. Continuation-in-part of application Ser. No. 703,273, Feb. 6, 1968. This application Nov. 21, 1969, Ser. No. 878,939

Claims priority, application Germany, Feb. 14, 1967, P 16 44 056.5

Int. Cl. D06p 1/02

U.S. Cl. 8—41 5 Claims

Process for dyeing and/or printing synthetic polyamides with dyes containing sulfonic acid groups and derived from 3-aminophthalimides, or 4-aminophthalimides, and 2-amino-8-hydroxynaphthalene-6-sulfonic acid.

3,591,325

PRODUCTS AND PROCESS FOR REMOVING ORGANIC PIGMENTS AND DYES FROM DYED AND PRINTED NATURAL AND SYNTHETIC TEXTILE MATERIALS

Ira Sapers, Maplewood, N.J., assignor to Arkansas Company, Inc., Newark, N.J.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,413

Int. Cl. D06l 3/00

U.S. Cl. 8—102 10 Claims

A process for removing organic dyes and pigments, such as phthalocyanine, vat and azo pigments which are normally used with various binding agents, and also including fiber reactive dyes, any of which have been used to impart color or brightness to natural or synthetic textile materials, consisting of treating such textile materials in an aqueous medium containing sodium or potassium hydroxide, a reducing agent such as sodium hydrosulfite, and a stripping assist selected from the group including ethoxylated aliphatic or araliphatic long chain amines containing 12–20 carbon atoms in the aliphatic part, quaternized with an aromatic alkylating agent providing benzyl, halobenzyl, xylyl, or xylylhalide groups in the quaternary moiety, and the novel stripping assistants obtained in this way.

3,591,326

CONTINUOUS SCOURING PROCESS

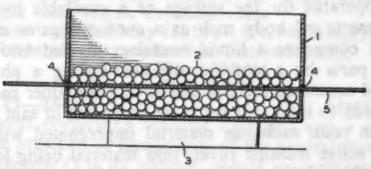
Arne Johnels, Boras, Sweden, assignor to I.W.S. Nominee Company Limited, London, England

Filed Oct. 28, 1968, Ser. No. 771,021

Claims priority, application Great Britain, Oct. 26, 1967, 48,812/67

Int. Cl. D01c 3/00

U.S. Cl. 8—139 4 Claims



Textile fabrics more especially of wool are scoured by wetting with solutions of surface active agents and passing them through a bed of vibrating metal or glass balls. The fabric may be wetted either by impregnation before passage through the bed of balls or the bed itself may be immersed in a bath of the solution.

3,591,327

PROCESS FOR DYEING AROMATIC POLYAMIDE FIBERS

Shogo Matsuda, Toyonaka-shi, and Takeo Oshima, Ibaraki-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 8, 1967, Ser. No. 644,472

Claims priority, application Japan, June 11, 1966, 41/37,314

Int. Cl. D06p 5/00

U.S. Cl. 8—166 11 Claims

Aromatic polyamide fibers which are hardly dyeable with commercial dyes such as acid dyes, metal complex

dyes, direct dyes and the like can readily be dyed with such dyes to give a deep colored dyed product by treating the fibers in a bath containing as an accelerator one or more of alkylbenzene and alkylnaphthalene where at least one hydrogen atom of the alkyl moiety is substituted with halogen, or derivatives thereof in which the aromatic ring of said compounds is substituted by an alkyl group or a halogen atom. The accelerator may be applied before or during dyeing. The amount of accelerator used in the treating bath is 3 to 30 g./liter.

3,591,328

METHOD OF AND MEANS FOR CONTROLLING MOLD SPORES IN AIR-HANDLING SYSTEMS

Bela J. Szappanyos, 2480 W. Maple Road 48011, and Robert M. Eckerman, 942 Arden Lane 48009, both of Birmingham, Mich.

No Drawing. Continuation of abandoned application Ser. No. 466,829, June 24, 1965. This application Aug. 22, 1969, Ser. No. 871,723

Int. Cl. A61l *9/00;* F24f *3/16;* B44d *1/08*

U.S. Cl. 21—58 9 Claims

A method of treating the air contacted and adjacent surfaces of air propelling devices of air conditioning and air treating equipment by applying thereto an admixture of a fungicide and an air driable solvent and having film-reinforcing ingredients therein to coat the surfaces and to dry thereon to form a fungus growth inhibiting coating thereon. The admixture is introduced into the air inlet of air conditioning or treating equipment while the air propelling mechanism is functioning.

3,591,329

APPARATUS FOR PRESERVING HYDROPHILIC GELS, MORE PARTICULARLY OCULAR CONTACT LENSES

Richard Chromeček, Jiří Vodňanský, and Jiří Manych, Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

No Drawing. Filed Mar. 13, 1968, Ser. No. 712,609

Claims priority, application Czechoslovakia, Mar. 15, 1967, 1,883/67

Int. Cl. A61l *3/00*

U.S. Cl. 21—61 5 Claims

Apparatus for the storage of a swellable hydrophilic polymeric gel body such as a contact lens or other implant comprises a liquid container divided into at least two parts by a porous wall and having a physiologic liquid contained therein, one of said container parts being adapted to hold said gel body immersed in said liquid, a cation resin exchange material impregnated with a surface active metallic silver, said material being located in the other of the container parts and being soluble by said liquid to release surface silver ions over a period of time to thereafter, freely flow through said porous wall into contact with said gel body.

3,591,330

USE OF PHOSPHORAMIDES AS CORROSION INHIBITORS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Nov. 25, 1966, Ser. No. 596,798, now Patent No. 3,524,908, dated Aug. 18, 1970. Divided and this application Oct. 20, 1969, Ser. No. 867,943

Int. Cl. C23f *11/16*

U.S. Cl. 21—2.5 5 Claims

The use of phosphoramides, such as those prepared from esters of phosphorous acid and ammonia or amines, in inhibiting corrosion. These are particularly illustrated by phosphoramides, prepared by reacting dialkyl phosphites with polyamies, which are particularly useful in petroleum systems such as in oil wells or in oil-brine mixtures.

3,591,331

PROCESS FOR PRODUCING AMMONIUM METATUNGSTATE

Vincent Chiola, Towanda, Phyllis R. Dodds, Wysoc, and Fred W. Liedtke and Clarence D. Vanderpool, Towanda, Pa., assignors to Sylvania Electric Products Inc.

Filed June 30, 1969, Ser. No. 837,613

Int. Cl. C22b *59/00;* C01g *41/00*

U.S. Cl. 23—22 9 Claims

A process for producing ammonium metatungstate from ammonium tungstate without an appreciable formation of ammonium paratungstate is disclosed. The process comprises contacting an aqueous ammonium tungstate solution having a pH of at least about 9 with an organic extractant solution comprising di - 2 - ethylhexyl phosphoric acid, and a water-insoluble hydrocarbon solvent, said components being in specified ratios to extract ammonium ions from the aqueous solution, separating the resultant aqueous solution from the organic solution, heating said aqueous solution to a temperature of at least about 60° C. for at least about 1 hour and recovering an essentially pure ammonium metatungstate.

3,591,332

PROCESS FOR RECOVERY OF SULFUR FROM GYPSUM

D'Arcy R. George and James M. Riley, Salt Lake City, Utah, assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,730

Int. Cl. C01d *7/00;* C01b *7/16, 11/24*

U.S. Cl. 23—64 1 Claim

Sulfur is produced from gypsum by (1) roasting the gypsum with carbon or a reducing gas to form CaS; (2) reacting the CaS with H_2S and water to produce a solution of $Ca(HS)_2$; (3) converting the $Ca(HS)_2$ to NaHS by ion exchange; (4) carbonating the NaHS solution to form H_2S and $NaHCO_3$; (5) decomposing H_2S and $NaHCO_3$ to produce sulfur and Na_2CO_3, respectively.

3,591,333

METHOD OF CHLORINATING TITANIUM-BEARING MATERIALS

Gordon A. Carlson and Robert F. Mitchell, New Martinsville, W. Va., assignors to PPG Industries, Inc.

No Drawing. Continuation of application Ser. No. 688,677, Dec. 7, 1967. This application Apr. 30, 1970, Ser. No. 31,836

Int. Cl. C01g *23/02*

U.S. Cl. 23—87 18 Claims

Titanium-bearing materials are chlorinated with a chlorinating agent in a fluidized bed in the presence of a carbonaceous reductant. The regulation of reaction temperatures by removal of excess heat of reaction is discussed, and a method for increasing the amount of heat generated by the reaction is proposed.

3,591,334

METHOD FOR PREPARING ALKALI METAL PHOSPHATE COMPOSITIONS

Robert B. Hudson, St. Louis, and Charles C. Sisler, Des Peres, Mo., assignors to Monsanto Company, St. Louis, Mo.

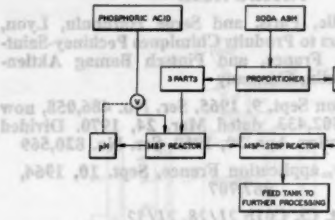
Continuation of application Ser. No. 365,426, May 6, 1964. This application Jan. 9, 1969, Ser. No. 791,209

Int. Cl. C01b *25/30*

U.S. Cl. 23—107 11 Claims

A method is described for preparing a chemical composition by the reaction of a plurality of reactants having molar ratios in the composition which are difficult to determine by controlled procedures by accurately proportioning at least one of the reactants into a plurality of

predetermined fractions, reacting at least one of the fractions with another reactant to form an intermediate product under accurately controlled conditions and reacting the intermediate product with the remaining reactants.



3,591,335

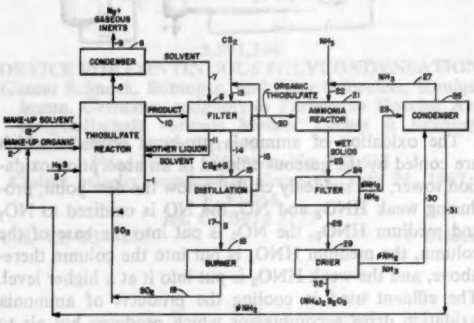
METHOD OF PREPARING AMMONIUM THIOSULFATE FROM AMINE THIOSULFATES

Ralph Leroy Grimsley and Richard L. Every, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Original application Feb. 27, 1967, Ser. No. 618,707, now Patent No. 3,483,267, dated Dec. 9, 1969. Divided and this application Aug. 5, 1969, Ser. No. 847,652

Int. Cl. C01b *17/64*

U.S. Cl. 23—115 **7 Claims**



A primary amine is reacted with hydrogen sulfide and sulfur dioxide in the presence of a solvent to form the amine thiosulfate and sulfur which precipitates in the solvent. The thiosulfate can be freed of sulfur by dissolving the sulfur in a sulfur solvent such as carbon disulfide or by dissolving the thiosulfate in hot water. The amine thiosulfate, with or without removal of sulfur, is reacted with ammonia to form the ammonium thiosulfate and regenerate the amine. The ammonium thiosulfate is recovered by filtration and the regenerated amine cycled back to the first reaction zone.

3,591,336

MINIMIZING CARBON IN PHOSPHORUS RECOVERY

Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 727,115, Mar. 18, 1968, which is a continuation-in-part of application Ser. No. 398,306, Sept. 22, 1964. This application Sept. 22, 1969, Ser. No. 860,006

The portion of the term of the patent subsequent to Nov. 18, 1986, has been disclaimed

Int. Cl. C01b *25/12*

U.S. Cl. 23—165 **9 Claims**

Phosphorus values in the form of P_2O_5 are recovered from phosphate ores reacted with carbon, silica and oxygen-containing gas in a rotary furnace having a vitreous lining held in place centrifugally.

3,591,337

METHOD OF MANUFACTURING SILICON NITRIDE

Roland John Lumbey, Northfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

No Drawing. Filed Mar. 13, 1968, Ser. No. 712,622

Claims priority, application Great Britain, Apr. 10, 1967, 16,284/67

Int. Cl. C01b *21/06;* B01j *17/20*

U.S. Cl. 23—191 **4 Claims**

Silicon nitride is manufactured by mixing finely divided silicon with finely divided silicon nitride and then heating the resultant mixture in a non-oxidising atmosphere containing nitrogen. The normal way of making silicon nitride is to use finely divided silicon alone, but it is found that the addition of some silicon nitride leads to a reduction in operating time which is considerably greater than the reduction which would be expected because some of the mixture is already constituted by silicon nitride.

3,591,338

PREPARATION OF METAL NITRIDES

William O. Roberts, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 5, 1968, Ser. No. 734,521

Int. Cl. C01b *21/06*

U.S. Cl. 23—191 **4 Claims**

The process for preparing nitrides of Group IV–B and Group V–B metals by reacting the metal halide with ammonia to form the metal amidohalide followed by decomposition in ammonia or nitrogen at up to 400° C. to form the metal nitrogen halide and decomposition in ammonia or nitrogen at 900 to 1200° C. to form the metal nitride, is improved by carrying out the decomposition steps in the presence of from 0.1 to 1 part by volume of hydrogen per part by volume of nitrogen or ammonia.

3,591,339

METHOD FOR PREPARING BINARY SALINE OR IONIC HYDRIDES

Jaroslav Vit, Vladimir Prochazka, and Bohuslav Casensky, Prague, Jiri Machacek, Krumvir, and Josef Vlk, Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

No Drawing. Filed May 15, 1967, Ser. No. 638,576

Claims priority, application Czechoslovakia, May 17, 1966, 3,299/66

Int. Cl. C01b *6/04*

U.S. Cl. 23—204 **14 Claims**

A process comprising reacting hydrogen and a metal Me in the presence of compounds of the general formula Me^rQ^r wherein Q is an alkoxyl, aroxyl or aralkoxyl selected from the group consisting of substituents derived from etheralcohols obtainable by the alkylation of one hydroxyl group in diols and in polyglycols, and substituents derived from etheralcohols obtainable by alkylation of two hydroxyl groups in triols and substituents derived from aminoalcohols of the general formula

$$R_{2-h}NH_hC_nH_{2n}OH$$

wherein R is an alkyl, h is 0, 1, or 2, and n is an integer between 1 and 15; and Me is an alkali metal, an alkaline earth metal, B, Al or Si; and r is the valence of Me.

3,591,340

METHOD FOR PREPARING HIGH PURITY CRYSTALLINE SEMICONDUCTIVE MATERIALS IN BULK

Thomas S. Plaskett, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

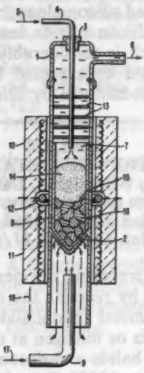
Filed July 11, 1968, Ser. No. 744,107

Int. Cl. C01b *27/00, 31/36;* C01g *9/08*

U.S. Cl. 23—204 **10 Claims**

Groups III–A—V–A and II–B—VI–A compounds and alloys thereof are prepared, for example, by flowing a

gaseous Group V compound into a bath of a molten Group III–A element having a temperature profile established thereabout. A container containing a molten metal or a mixture of said metals is placed in a vertical furnace, about which a steep temperature gradient is established along its length. A gaseous compound of a Group V–A element or a mixture of gaseous Group V–A compounds and an inert gas is permitted to flow into the molten Group III–A metal. A temperature gradient along the length of the crucible causes the Group V–A element to react with the molten Group III–A metal and the reaction product therefrom dissolves in the molten metal. The



lower surface of the crucible is cooled by a cool air blast which establishes convection currents within the molten metal so that as the solubilized Group III–A—V–A compound moves downwardly in the crucible it mixes with the molten Group III–A compound, is cooled and crystallizes out of the molten metal as a highly pure crystalline ingot of the specific III–A—V–A composition. It has also been found that pure silicon carbide can be prepared in a similar manner. For example, a mixture of methane and an inert gas is permitted to flow into molten silicon which is similarly subjected to a temperature gradient. The materials formed by the process of this invention are found to be of very high purity.

3,591,341

STANNATE STABILIZER COMPOSITIONS CONTAINING A PYROPHOSPHATE AND ORTHOPHOSPHORIC ACID, THEIR PREPARATION, AND HYDROGEN PEROXIDE SOLUTIONS STABILIZED THEREWITH

Victor J. Reilly, Memphis, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 24, 1968, Ser. No. 747,113

Int. Cl. B01j *1/16;* **C01b** *15/02*

U.S. Cl. 23—207.5 **13 Claims**

Aqueous stannate stabilizer compositions containing a stannate, a pyrophosphate and orthophosphoric acid in an amount sufficient to adjust the pH of the composition to 9–11, a method for their preparation, and hydrogen peroxide solutions stabilized therewith. The stabilizer compositions are especially useful for stabilizing hydrogen peroxide solutions containing at least 30% H_2O_2 to provide stable products which remain exceptionally stable when diluted to strengths of 2–10% H_2O_2 without further addition of any stabilizer.

3,591,342

APPARATUS FOR THE PREPARATION OF NITRIC ACID

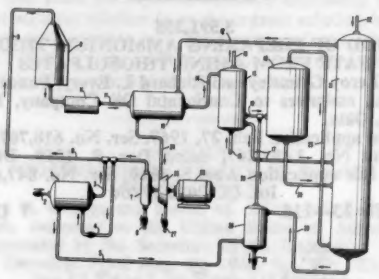
Jean-Marie Lerolle, Paris, and Serge Hardouin, Lyon, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Paris, France, and Pintsch Bamag Aktiengesellschaft, Berlin, Germany

Original application Sept. 9, 1965, Ser. No. 486,058, now Patent No. 3,502,433, dated Mar. 24, 1970. Divided and this application Apr. 30, 1969, Ser. No. 820,569

Claims priority, application France, Sept. 10, 1964, 987,707

Int. Cl. C01b *21/28, 21/32*

U.S. Cl. 23—262 **4 Claims**



The oxidation of ammonia produces products which are cooled by the gaseous effluent of an absorption-oxidation tower, are suddenly chilled below the dew point, producing weak HNO_3 and NO, the NO is oxidized to NO_2 and medium HNO_3, the NO_2 is put into the base of the column, the medium HNO_3 is put into the column thereabove, and the weak HNO_3 is put into it at a higher level. The effluent used in cooling the products of ammonia oxidation drive a compressor which produces hot air to heat the ammonia, mixes with the concentrated HNO_3 from the tower to sweep out unabsorbed gases and coloring matter, and is injected into the oxidation of NO gas. The acid is over 70% HNO_3. The process uses all water formed by its reactions in the acid, adds only enough water to attain the selected concentration, discharges no water, operates at medium pressure of 3.5 to 4.5 atm. abs. The apparatus is novel.

3,591,343

EMERGENCY OXYGEN APPARATUS

Miles J. McGoff, Warrendale, John W. Mausteller, Evans City, and John C. King, Mars, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

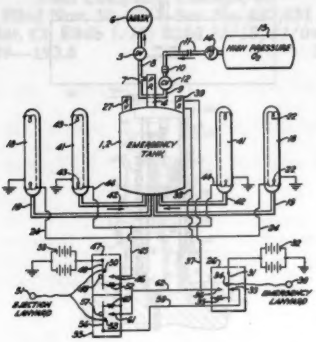
Filed Oct. 29, 1968, Ser. No. 771,578

Int. Cl. B01j *7/00;* **C01b** *13/08*

U.S. Cl. 23—281 **11 Claims**

Connected with the outlet of an oxygen storage tank is a pressure reducer valve that has an outlet for connection with the demand valve of a breathing mask. For charging the tank with oxygen from a primary oxygen supply system, there is a conduit provided with a check valve permitting flow only toward the tank. An oxygen producing candle is in a receptacle connected by a conduit with the tank, and manually operable means is pro-

vided for igniting the candle to generate additional oxygen for the tank. Another candle receptacle also is connected



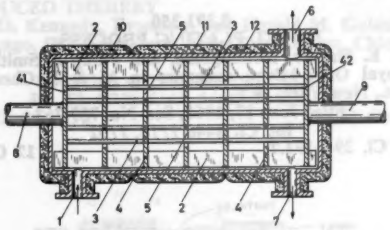
with the tank, and there are means for igniting it followed by automatic ignition of the other candle.

3,591,344

DEVICE FOR CONTINUOUS POLYCONDENSATION

Günter Schnock, Bobingen, and Peter Schweizer, Konigsbrunn, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 5, 1968, Ser. No. 742,613
Claims priority, application Germany, July 26, 1967, F 53,068
Int. Cl. B01d *1/22*
U.S. Cl. 23—285 **7 Claims**



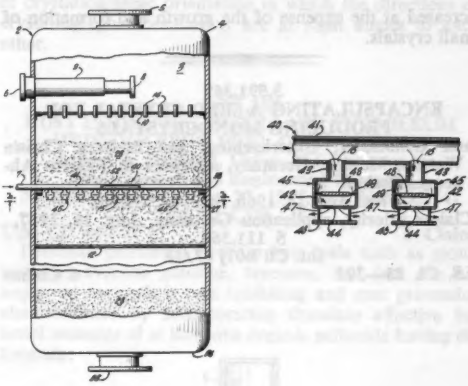
The invention provides a device for the continuous polycondensation of melts comprising a heatable, vacuum-tight, cylindrical or conical, horizontal or almost horizontal reactor with inlet at one end and outlet at the other end for the melt and outlet for the vapour and inside of the reactor a stirrer the shape of which is adapted to the shape of the reactor and the continuous or discontinuous axis of rotation of which is congruent with the axis of the reactor. The stirrer is subdivided by plurality of disks in vertical position with respect to its axis, which disks are provided with perforations staggered from disk to disk. Parallel to the axis of the stirrer a plurality of peripherally arranged groove- or ribbon-shaped drag elements are provided which are parallel to the axis of the stirrer and rod-shaped elements are fixed outside of the range of immersion of the stirrer into the melt, which elements preferably depart from the two outer disks. When the stirrer rotates the drag elements continuously convey the melt from the bottom of the reactor on to the rod-shaped elements inside of the stirrer where it is uniformly distributed in a thin layer and from where it returns into the sump of the reactor.

3,591,345

GAS QUENCH DEVICE FOR MIXED-PHASE REACTORS

Jack M. Hochman, Boonton, and Robert M. Koros, Westfield, N.J., assignors to Esso Research and Engineering Company

Filed Nov. 13, 1968, Ser. No. 775,456
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 **1 Claim**



Apparatus for introducing quench gas to packed-bed reactors, which apparatus is supported within the packed-bed itself. The apparatus comprises a piping arrangement supported within the bed and provided with a number of holes so sized such that the quench gas leaves the apparatus in a uniform manner. Suitable baffle means are provided in communication with each hole to both prevent direct high velocity impingement of the quench gas on the bed and to achieve higher pressure drops so that larger holes may be used, thereby reducing the possibility of plugging. In a preferred embodiment means are also provided for insuring uniformity of bed temperature by the elimination of localized hot spots.

3,591,346

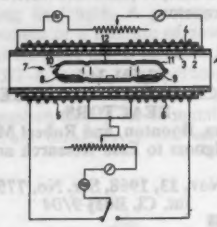
METHOD OF MANUFACTURING CRYSTALS AND CRYSTALS MANUFACTURED BY SUCH METHODS

Rudolf Wilhelm Julius Kluckow, Eilendorf, and Heinz Scholz, Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 530,970, Mar. 1, 1966. This application Aug. 6, 1968, Ser. No. 754,130
Claims priority, application Netherlands, Mar. 3, 1965, 6502654
Int. Cl. B01d *7/00*
U.S. Cl. 23—294 **10 Claims**

Large crystals are formed from a fluid containing crystal forming material by periodically depositing crystalline material from the fluid and transferring part of the deposited material back into the fluid and away from the area of deposition, the amount of crystal material deposited in the deposition part of the cycle being greater than the

amount of crystal material transferred to the fluid during each period. By this means the growth of large crystals is



increased at the expense of the growth and formation of small crystals.

3,591,347
ENCAPSULATING A SEED CRYSTAL FOR PRODUCING MONOCRYSTALS

Josef Grabmaier, Unterhaching, and Barbara Christa Watson, Munich, Germany, assignors to Siemens Aktiengesellschaft

Filed Aug. 14, 1968, Ser. No. 752,651
Claims priority, application Germany, Aug. 16, 1967, S 111,369
Int. Cl. B01j 17/18
U.S. Cl. 23—301 **6 Claims**

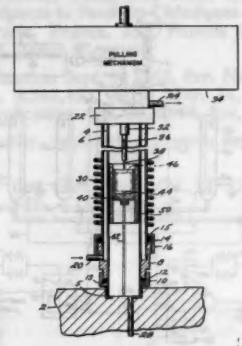
Described is a method of producing monocrystals from semiconducting compounds which dissociate at the melting point, preferably gallium arsenide monocrystals. The semiconductor material molten in a crucible is completely encapsulated by a thin layer of boron oxide (B_2O_3). The crystal is pulled in accordance with the Czochralski method from the semiconductor melt, with the aid of a seed crystal. The seed crystal according to the invention, to prevent the evaporation of the more volatile component of the semiconducting compound therefrom, is encased, prior to being installed into the pulling device, with a thin film of B_2O_3.

3,591,348
METHOD OF GROWING CRYSTALLINE MATERIALS

Harold E. La Belle, Jr., Quincy, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Jan. 24, 1968, Ser. No. 700,126
Int. Cl. B01j 17/18
U.S. Cl. 23—301 **17 Claims**

Method of growing crystalline materials in the form of elongate bodies of predetermined constant cross-section. The method involves provision of a shaping member having a surface with a gross configuration conforming to the desired cross-sectional shape of the body to be grown, establishing on the surface a liquid film of the material to be grown, and continuously growing the body from the



liquid film while simultaneously feeding additional material to said surface to replenish said film.

3,591,349
HIGH CARBON TOOL STEELS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968. This application Aug. 27, 1969, Ser. No. 853,326
Int. Cl. C22c 39/54
U.S. Cl. 29—182.7 **7 Claims**

This application relates to the powder metallurgy of wrought, high carbon tool steels and also to a powder metallurgy method for producing said steels characterized metallographically by a uniform distribution of finely divided carbides in both the longitudinal and transverse directions.

3,391,350
NOVEL PLATING PROCESS

Jesse E. Stareck, Birmingham, and Philip J. Smith, Jr., Royal Oak, Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Filed June 17, 1968, Ser. No. 737,767
Int. Cl. B44d 1/18, 1/02
U.S. Cl. 29—191.2 **12 Claims**

In accordance with certain of its aspects, the process of this invention for preparing a nickel plate receptive to a decorative chromium metal deposit, characterized by the presence of microporous areas and microcracked areas over substantially the entire surface of said chromium metal plate, comprises affixing to a basis material bearing a conductive metal surface a stratum of particles having a particle size of about 0.05–15 microns and a density on said conductive metal surface of about 100–5,000,000 particles/cm.^{2}; and depositing in said stratum of particles a nickel layer having a high tensile stress of at least about 8,400 kg./cm.^{2} and an effective thickness less than the maximum thickness of said stratum of particles thereby forming a matrix wherein said particles are retained affixed to said surface in fixed position in said nickel layer, and at least some of said particles intercept the surface of said nickel layer.

3,591,351
RETICULATED STRUCTURE AND METHOD OF MANUFACTURE

Frederick E. Ullman, Winnetka, Ill., assignor to Inland Steel Company, Chicago, Ill.

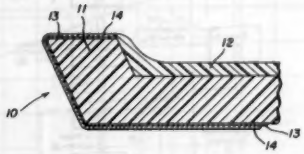
Filed Nov. 30, 1967, Ser. No. 687,031
Int. Cl. E04b *1/18;* B21d *13/10, 31/04*
U.S. Cl. 29—193.5 33 Claims

A reticulated structure made from sheet material, methods of manufacture thereof, and precut sheet material useful in forming the same, the structure being characterized by a plurality of side portions and bridge portions forming rows of spaced, interrupted polygonal-shaped apertures, the bridge portions being substantially parallel to and in the plane of the top and bottom surfaces defined by the reticulated structure side portions and connecting adjacent sides forming the apertures and/or flaps appended to some of the sides of the apertures providing increased surface areas in the planes defined by the outer surfaces of the reticulated structure.

3,591,352
PROCESSES FOR SELECTIVELY PLATING ONE COMPONENT OF MULTI-COMPONENT PLASTIC ARTICLES AND ARTICLES PRODUCED THEREBY

Peter D. Kennedy, Evanston, and Harold M. Goldstein, Chicago, Ill., assignors to Nibot Corporation, Chicago, Ill.

Filed Dec. 4, 1968, Ser. No. 780,984
Int. Cl. C23b *5/48, 5/60;* B44d *1/18*
U.S. Cl. 29—195 41 Claims



There are disclosed herein processes for producing multi-component plastic workpieces in which at least a first component thereof has a plated metal coating thereon, and workpieces produced by such processes. These processes generally comprise providing a strike solution, providing a multi-component workpiece including a first component formed of a first plastic material on which a metal is deposited upon application of the strike solution thereto and at least a second component formed of a second plastic material on which no metal is deposited upon application of the strike solution thereto, applying the strike solution to the workpiece to deposit a metal strike on the first component without depositing a metal strike on the second component, and plating a layer of plating metal over the metal strike to provide a plated metal coating on the first component while no metal is plated on the second component.

3,591,353
BIMETALLIC ELEMENTS HAVING HEAT-EXPANSION CHARACTERISTIC

Robert L. Snyder, Rochester, N.Y., assignor to American Standard Inc., New York, N.Y.

No Drawing. Filed Feb. 8, 1968, Ser. No. 703,861
Int. Cl. G01k *5/66*
U.S. Cl. 29—195.5 4 Claims

A thermosensitive element comprising a first layer and a second layer of a non-cubic metal having a high degree of crystallographic orientation in which the directions of crystallographic orientation are at right angles to each other.

3,591,354
RUST INHIBITING DISTILLATE PETROLEUM HYDROCARBON FUEL COMPOSITIONS

Roland A. Bouffard, Union, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Dec. 27, 1967, Ser. No. 693,741
Int. Cl. C10l *1/24*
U.S. Cl. 44—70 6 Claims

Distillate petroleum hydrocarbon fuels such as motor gasoline, aviation gasoline, kerosene, and fuel oils are improved as to their rust inhibiting and rust preventing characteristics by incorporating thereinto effective but small amounts of at least one organic sulfoxide having the formula:

$$R-\overset{\overset{O}{\|}}{S}-R_1$$

wherein Rs a radical selected from the group consisting of $-C_nH_{2n}COOH$; $-C_nH_{2n}OH$; $-C_nH_{2n}OC_nH_{2n+1}$; $-C_nH_{2n}COC_nH_{2n+1}$; $-C_nH_{2n}OOCC_nH_{2n+1}$; $-C_nH_{2n}COOC_nH_{2n+1}$; $-C_nH_{2n}OOCCH(CH_2COOH)C_nH_{2n-1}$; $-C_nH_{2n}OOCH(CH_2COOC_nH_{2n}-)C_nH_{2n-1}$; and R_1 is a radical selected from the group consisting of $-C_nH_{2n+1}$; $-C_nH_{2n}C_6H_5$; $-C_nH_{2n}C_6H_4C_nH_{2n+1}$; and any of the radicals listed for R, *n* being a whole number. At least one of R and R_1 has a total of from 10 to 250 carbon atoms. The amounts of the sulfoxides employed range between about 0.1 and about 100 pounds per thousand barrels (42 gallons per barrel) of fuel.

3,591,355
INDUSTRIAL GAS

Ertman Leonard Kessler, Plymouth, Mich., assignor to I.G. Corporation, Detroit, Mich.

No Drawing. Filed July 29, 1968, Ser. No. 748,235
Int. Cl. C10l *3/00*
U.S. Cl. 48—197 6 Claims

A two-phase, liquid and gas, additive for industrial gases such as propane comprising gaseous pentanes and butanes and liquid methanol which are used for cutting, welding and the like and which entrains the propane and gaseous portion of the additive in the liquid portion of the additive and which thereby purifies and catalyzes the gaseous mixture to provide overall a two-phase industrial gas having an effective heat of combustion of about 3200 B.t.u.'s and which greatly reduces air pollutants by yielding more complete combustion of the constituents.

3,591,356
PROCESS FOR THE PRODUCTION OF A GAS CONTAINING GASEOUS HYDROCARBONS

Brian Hoyle Thompson and Binay Bhushan Majumdar, Solihull, England, assignors to The Gas Council, London, England

No Drawing. Filed July 22, 1968, Ser. No. 769,461
Int. Cl. C10g *13/00, 13/30*
U.S. Cl. 48—213 9 Claims

A process for the production of a gas containing gaseous hydrocarbons by the hydrogenation of non-distillate hydrocarbon oils. The oil is first preheated in the liquid phase, and then introduced through an atomiser into a gas recycle hydrogenator in which the oil reacts under pressure with, and is continuously entrained into circulation with, a supply of hydrogenating gas. A gas containing gaseous hydrocarbons is formed by reaction of the oil and the hydrogen, and is continuously withdrawn from the hydrogenator. The process is primarily for the hydrogenation of nondistillate oils, such as crude petroleum and particularly light crude petroleum.

3,591,357
METHOD FOR TREATING AND IMPREGNATING GLASS FIBER BUNDLES FOR REINFORCEMENT OF ELASTOMERIC MATERIALS

Nicholas S. Janetos, East Providence, and Alfred Marzocchi and David E. Leary, Cumberland, R.I., assignors to Owens-Corning Fiberglas Corporation

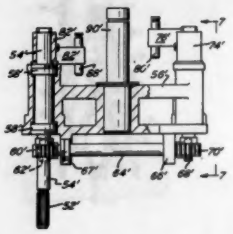
Continuation-in-part of abandoned application Ser. No. 655,944, July 25, 1967. This application Aug. 13, 1969, Ser. No. 849,676
The portion of the term of the patent subsequent to Jan. 28, 1986, has been disclaimed
Int. Cl. C03c *25/02;* B32b *17/04*
U.S. Cl. 65—3 22 Claims

This invention resides in the preparation of bundles, i.e. strands, yarns, cords and fabrics, formed of a plurality of reinforcing glass fibers in which the glass fiber bundle embodies an amount of elastomeric compatible treating material sufficient to permit repeated flexing without the fibers being able to cut through the coating protecting the fibers from destruction by mutual abrasion and sufficient to enhance the interbonded relationship between the treated bundles of reinforcing glass fibers and a continuous phase elastomeric material with which the glass fibers are combined in the manufacture of a glass fiber reinforced elastomeric product, such as glass fiber reinforced rubber tires, rubber belts and the like. The concepts of this invention reside in the coating of the individual glass fibers in connection with the glass fiber forming operation to provide a coating on the individual glass fibers sufficient to protect the fibers from destruction during flexure of the bundles that is subsequently formed of the coated glass fibers but insufficient to prevent processing the glass fibers and the bundles formed thereof into strands, yarns, cords or fabrics, then impregnating the bundle subsequently formed to complement the coating and incorporate the total impregnant adequate for the utilization of the glass fiber bundle as a reinforcement in elastomeric products.

3,591,358
GLASSWARE MOLD OPENING AND CLOSING MECHANISM WITH UNIFIED DRIVE MEANS

Robert S. Maul and Albert C. Kinsey, Jr., Millville, N.J., assignors to Maul Bros., Inc., Millville, N.J.

Filed Apr. 22, 1969, Ser. No. 818,319
Int. Cl. C03b *9/00*
U.S. Cl. 65—360 3 Claims

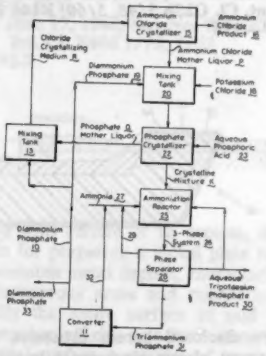


The opening and closing of molds in a glassware forming machine, such as an I.S. machine, is attained with greater pressure using a simpler linkage than that used heretofore. The mold holder arms on the blank or blow station are connected to a pair of shafts of which only one is directly connected to a motor. The other shaft is drivingly connected to said one shaft so that both shafts may oscillate in opposite directions in unison.

3,591,359
CYCLIC PROCESS FOR PRODUCING TRIPOTASSIUM PHOSPHATE AND AMMONIUM CHLORIDE

Leland J. Beckman, Pasco County, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 15, 1968, Ser. No. 767,759
Int. Cl. C05b *7/00;* W1c *1/16;* C01b *25/28*
U.S. Cl. 71—34 9 Claims



Crystalline ammonium chloride is separated from mother liquor having base/acid ratio in range 1.25–1.5 and NH_4^+/K^+ mole ratio in range 80/20–72/28. The base/acid ratio of the chloride mother liquor is adjusted to 1.0 to permit crystallization and separation of mono (ammonium-potassium) phosphate, which is converted to aqueous tripotassium phosphate and solid diammonium phosphate. The latter is added to the phosphate mother liquor to adjust the base/acid ratio to 1.25–1.5, thereby

producing a medium from which additional ammonium chloride can be crystallized and separated. Maintaining net balance of components by adding potassium chloride, phosphoric acid, ammonia and water permits continuous operation of the cyclic process.

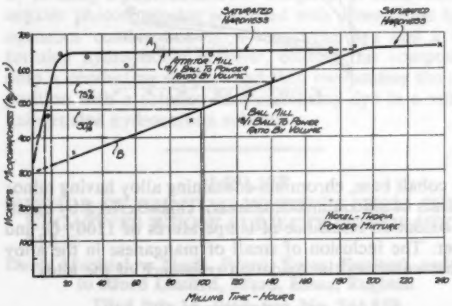
3,591,360
METHOD OF CONTROLLING WEEDS IN SUGAR BEET FIELDS
Frederick H. Vahlsing, Jr., Allentown, N.J., assignor to Vahlsing, Inc.
No Drawing. Filed Aug. 8, 1968, Ser. No. 751,066
Int. Cl. A01n *11/00*
U.S. Cl. 71—65 **6 Claims**

Weeds in sugar beet fields are defoliated, killed or otherwise arrested, without damage to the sugar beets, by application of an aqueous solution of sodium hydroxide in controlled amounts.

3,591,361
HERBICIDAL MULCHING FILMS
Shoichi Ishimoto, Chiba-ken, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, and Mikado Seed Growers Co., Ltd, Chiba-shi, Chiba-ken, Japan
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,408
Claims priority, application Japan, Dec. 28, 1967, 43/83,784
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **3 Claims**

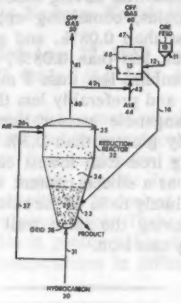
A herbicidal mulching film comprising a polyolefin film containing a herbicide of a member selected from the group consisting of 3-(3,4-dichlorophenyl) - 1,1 - dimethylurea and 2-methylthio-4,6-bisisopropylamino-S-triazine.

3,591,362
COMPOSITE METAL POWDER
John S. Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Filed Mar. 1, 1968, Ser. No. 709,700
Int. Cl. B22f *9/00*
U.S. Cl. 75—.5BA **20 Claims**


SATURATED HARDNESS
SATURATED HARDNESS
ATTRITOR MILL 4% BALL TO POWDER RATIO BY VOLUME
BALL MILL 4% BALL TO POWDER RATIO BY VOLUME
MODEL-THORIA POWDER MIXTURE
MILLING TIME - HOURS

A wrought composite metal powder, or mechanically alloyed metal powder, is provided comprised of a plurality of constituents, at least one of which is a metal capable of being compressively deformed, the composite powder being preferably in the heavily cold worked condition, i.e., having substantially the saturation hardness for the system involved, the particles thereof being characterized metallographically by a cohesive internal structure comprised of the starting constituents intimately united together and identifiably mutually interdispersed.

3,591,363
RADIANT HEATED IRON ORE REDUCTION PROCESS
Donald L. Campbell, Short Hills, N.J., assignor to Esso Research and Engineering Company
Filed Dec. 28, 1967, Ser. No. 694,126
Int. Cl. C22b *5/14*
U.S. Cl. 75—26 **13 Claims**



Highly metallized reduced iron ore is prepared in a continuous single-stage fluid bed process using hydrocarbon reductant. Radiant heat is supplied to the process by combusting above the bed the gases liberated in the process.

3,591,364
REDUCING GAS GENERATION
Blake Reynolds, Riverside, and Clifford G. Ludeman, Darien, Conn., assignors to Texaco Development Corporation, New York, N.Y.
No Drawing. Filed Sept. 19, 1967, Ser. No. 668,962
Int. Cl. C21b *5/00, 5/06, 13/00*
U.S. Cl. 75—42 **7 Claims**

Process for the production of an improved reducing gas comprising essentially H_2+CO and having a minimum "reducing ratio" $(H_2+CO)/(H_2O+CO_2)$ of 15. The reducing gas is generated in a separate unpacked noncatalytic reaction zone by the partial oxidation of a liquid hydrocarbonaceous fuel, substantially in the absence of supplemental H_2O. The temperature in the reaction zone is moderated by a gas mixture having a "reducing ratio" greater than about 1, for example: a portion of cooled reducing gas from the reaction zone; or a portion of the off-gas from an integrated process zone such as an ore reduction zone; or a mixture of both of these gases. In addition to the metallurgical applications, the gas mixtures, as produced by the process of this invention, may be used directly as a fuel gas or as feedstock in processes for the synthesis of methanol, hydrocarbons, or oxygenated organic chemicals.

3,591,365
HEAT RESISTING CORROSION RESISTING IRON CHROMIUM ALLOY
Ryoji Ohmachi, Nishinomiya-shi, Japan, assignor to Santoku Kinzoku Kogyo Kabushiki Kaisha, Higashi-Nada-ku, Kobe, Japan
No Drawing. Filed Jan. 16, 1969, Ser. No. 792,240
Int. Cl. C22c *37/10, 39/02*
U.S. Cl. 75—124 **2 Claims**

A heat resisting corrosion resisting alloy of Fe, Cr, Al, and Y, characterized by further constituents thereof, Gd and/or Dy. 10 to 40 parts by weight of Gd and/or Dy are mixed with 100 parts by weight of Y. This alloy is useful at 1350° C., highly corrosion resisting, highly workable, and has a high tensile strength at an elevated temperature.

3,591,366
ALLOYED GRAY CAST IRON
Peter Triches, Bahnhofquarter, Oensingen, Switzerland, and Karl Heinz Kleemann, Dietzenbach-Steinberg, Germany, assignors to Von Roll AG, Gerlafingen, Switzerland
No Drawing. Filed July 24, 1968, Ser. No. 747,087
Claims priority, application Germany, July 29, 1967, P 16 08 239.6
Int. Cl. C22c *37/04, 37/10*
U.S. Cl. 75—126A 13 Claims

A tough gray cast iron having excellent tensile strength and impact modulus, containing approximately 2.5 to 3.8% carbon, less than 0.08%, and preferably less than 0.04% phosphorus, less than 0.08%, and preferably less than 0.04% chromium, less than 3 ml./100 g. hydrogen, less than 0.06%, and preferably less than 0.03% sulphur, a content of manganese greater than 0.3% and up to 2.25%, preferably greater than 0.3% and up to 1.75%, the balance being iron with lowest content of disturbing elements as well as a silicon content which is reduced by about 0.8% absolutely to ½ of the silicon content required in cast pieces having the same wall thickness made of conventional gray cast iron.

3,591,367
ADDITIVE AGENT FOR FERROUS ALLOYS
Frederick H. Perfect, Wyomissing, Pa., assignor of fractional part interest to Reading Alloys, Inc., Robesonia, Pa.
No Drawing. Filed July 23, 1968, Ser. No. 746,769
Int. Cl. C22c *35/00*
U.S. Cl. 75—133 11 Claims

Method of producing vanadium and columbium alloy steels by adding to molten steel an addition agent containing an oxide of the alloying metal, an inorganic reducing agent, particularly silicon and aluminum, and lime. The amount of reducing agent employed is at least sufficient to reduce the oxide of the alloying metal to the corresponding metal, and the amount of lime is at least sufficient to combine with the oxide of the reducing agent which is produced to form a slag having a melting point below 1800° C.

3,591,368
COPPER ALLOY FOR USE AT HIGH TEMPERATURES
Tsunetaro Ohta, Nishinomiya, Japan, assignor to The Toa Valve Company Limited, Amagasaki, Hyogo Prefecture, Japan
No Drawing. Filed Aug. 8, 1968, Ser. No. 751,048
Claims priority, application Japan, Dec. 15, 1967, 42/80,377
Int. Cl. C22c *9/04*
U.S. Cl. 75—134 2 Claims

The alloy of copper base generally comprises zinc, nickel and a small amount of titanium and chromium with addition of a small amount of silicon and lead when desired. With these constituent elements, an alloy of improved mechanical strength and corrosion resistivity at high temperatures in the range of from 300 to 400° C. is obtained.

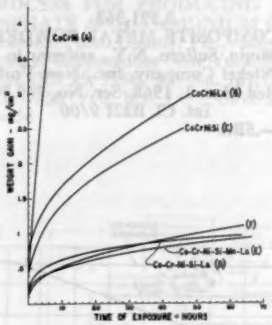
3,591,369
METHOD OF ADDING MANGANESE TO ALUMINUM
Jordan P. Tuthill, Glenmore, Pa., assignor to Foote Mineral Company, Exton, Pa.
No Drawing. Filed Mar. 17, 1969, Ser. No. 807,940
Int. Cl. C22c *1/02*
U.S. Cl. 75—138 11 Claims

Manganese metal is added to molten aluminum in the form of a manganese body having thereon a coating containing a potassium fluoride and which forms a molten phase at the temperature of the molten aluminum. There is provided a novel manganese additive for this purpose comprising a body of manganese having the stated coating thereon, and there is also provided a method for making the additive comprising providing the stated coating on a body of manganese.

3,591,370
DENTAL ALLOY
André Denéréaz, London, England, assignor to The Amalgamated Dental Company Limited, London, England
No Drawing. Filed Oct. 4, 1968, Ser. No. 764,996
Claims priority, application Great Britain, Oct. 24, 1967, 48,205/67
Int. Cl. C22c *5/00, 7/00*
U.S. Cl. 75—169 14 Claims

A new dental alloy comprises silver, tin, copper, nickel and indium, suitably 65 to 75% by weight of silver, 23 to 29% by weight of tin, up to 6% by weight of copper, 0.1 to 2% by weight of nickel and 0.1 to 2% by weight of indium. The alloy may contain mercury in an amount of up to 3% by weight.

3,591,371
COBALT BASE OXIDATION RESISTANT ALLOY
Henri Hatwell, Indianapolis, Ind., and Charles D. Desforges, Rhode-St.-Genese, and Pierre L. Moentack, Brabant, Belgium, assignors to Cabot Corporation
Filed Nov. 4, 1968, Ser. No. 773,149
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 4 Claims



A cobalt base, chromium-containing alloy having minor amounts of silicon and lanthanum characterized by excellent oxidation resistance at temperatures of 1200° C. and higher. The inclusion of small of manganese in the alloy further enhances the oxidation resistance of the alloy.

3,591,372
ALLOY STABILIZATION
John Hockin, Palatine, Michael J. Woulds, Schaumburg, and Carl H. Lund, Arlington Heights, Ill., assignors to Martin Metals Company, Wheeling, Ill.
No Drawing. Filed Aug. 12, 1968, Ser. No. 751,757
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 6 Claims

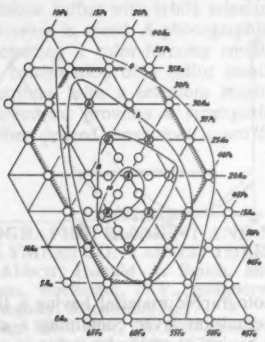
Sensitivity of certain nickel-chromium-base alloys to formation of deleterious sigma phase can be overcome by replacing nickel or iron in such alloys with about 0.5% to about 6% cobalt.

3,591,373

PERMANENT MAGNETIC ALLOY COMPOSED OF PLATINUM, GOLD AND IRON

Shotaro Shimizu and Eigo Hashimoto, Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Oct. 7, 1968, Ser. No. 765,604
Int. Cl. C22c 5/00; H01f 1/04
U.S. Cl. 75—172 4 Claims



A permanent magnetic alloy, comprising: 15–40 atomic percent of platinum, 5–35 atomic percent of gold and 40 atomic percent of iron.

3,591,374

PYRYLIUM DYE OVERCOATING OF PYRYLIUM DYE SENSITIZED PHOTOCONDUCTIVE ELEMENTS

Edward J. Seus, Penfield, N.Y., assignor to Eastman Kodak Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 708,805, Feb. 28, 1968. This application Oct. 1, 1968, Ser. No. 764,302
Int. Cl. G03g 13/22, 5/06
U.S. Cl. 96—1.6 12 Claims

High speed electrophotographic elements are prepared by forming a photoconductive composition comprising an organic photoconductor sensitized with a two-phase heterogeneous combination of a sensitizing dye and a film-forming hydrophobic polymer, coating this composition onto a conducting support and then overcoating the composition with a solution of a sensitizing dye in a volatile halogenated hydrocarbon solvent.

3,591,375

METHOD OF PRINTING POSITIVES FROM COLOR NEGATIVES WHOSE SUBJECTS INTEGRATE TO BLUE

Denis Manktelow Neale, Ilford, Essex, England, assignor to Ilford Limited, Ilford, Essex, England

Filed July 15, 1968, Ser. No. 744,959
Claims priority, application Great Britain, July 20, 1967, 33,482/67
Int. Cl. G03c 7/16; G03b 27/78
U.S. Cl. 96—23 6 Claims

This application describes a method of printing positives from multicolour negatives wherein for each colour component of printing light, red, green and blue, printing continues until a predetermined integral of light against time has been administered to the print material as measured by an exposure control means, said predetermined integral being substantially constant for negatives representing subjects integrating to grey, the improvement which comprises reducing the said predetermined integral in response to means for detecting an abnormally low ratio of integrated transmittance of the negative to blue light relative to light of longer wavelength.

3,591,376

ALKOXY DISUBSTITUTED HYDROQUINONES

Burton D. Wilson and Derek D. Chapman, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 27, 1968, Ser. No. 755,720
Int. Cl. G03c 5/54, 5/38, 5/30
U.S. Cl. 96—29 12 Claims

Photographic developing agents which consist of particular alkoxy disubstituted hydroquinones either as a sole developing agent or in combination with other photographic developing agents provide increased maximum density and contrast without undesired increase in minimum density of developed images. These developing agents are especially suitable in photographic elements, processes and/or developer compositions in diffusion transfer systems.

3,591,377

PHOTOGRAPHIC ELEMENTS AND PROCESSES EMPLOYING PHOTOSENSITIVE POLYMERS

Michael J. Alsup, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,918
Int. Cl. G03c 5/00, 1/68
U.S. Cl. 96—35.1 19 Claims

Positive and negative images can be prepared, with an element comprising a photosensitive polyester composition sandwiched between two supports, by a photoadhesion process which comprises exposing the element to actinic radiation and separating the supports to develop an image.

3,591,378

PROCESS FOR MAKING POSITIVE-WORKING RELIEF PLATE

Joseph H. Altman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 31, 1968, Ser. No. 748,968
Int. Cl. G03c 5/00; G03f 7/08
U.S. Cl. 96—35.1 8 Claims

Positive photomechanical reproductions are prepared from normally negative-working photosensitive compositions which comprise an organic solvent-soluble colloid and an oxygen-sensitive aryl azide sensitizer therefor, by first imagewise exposing the composition in the presence of oxygen, then overall exposing the composition in the absence of oxygen and developing an image by removing the composition from areas which have received both an imagewise and overall exposure.

3,591,379

PHOTOGRAPHIC OVERCOAT COMPOSITIONS AND PHOTOGRAPHIC ELEMENTS

James Plakunov, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 9, 1968, Ser. No. 719,844
Int. Cl. G03c 1/76, 1/78, 5/26
U.S. Cl. 96—50 13 Claims

Photographic elements such as, for example, X-ray film, comprising a support, one or more photographic silver

halide layers, and one or more protective overcoat layers and a composition of matter which has utility in such overcoat layers are disclosed. The photographic elements are characterized by having a good combination of photographic properties such as, for example, sensitivity and contrast, resistance to abrasion and low haze; and are more particularly characterized in the use of at least one overcoat layer having the disclosed composition comprising gelatin, and at least one other hydrophilic colloid and finely divided colloidal silica or silica gel having an average particle size below 50 millimicrons.

3,591,380

RAPID STABILIZING PROCESS FOR COLOR PHOTOGRAPHIC MATERIALS

Kinji Ohkubo and Katsumi Hayashi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed July 22, 1968, Ser. No. 746,322

Claims priority, application Japan, July 28, 1967, 42/48,560

Int. Cl. G03c *5/52*

U.S. Cl. 96—55 **10 Claims**

A method for rapidly developing an exposed photographic material containing differently sensitized gelatino-silver halide emulsions and color formers capable of reacting with the oxidation products of a primary amine whereby said material is placed into a developing bath containing a primary aromatic amine, the developing process is stopped in a stop bath and the product is bleach-stabilized in a bath containing an anion of an iron (III) monohydrogen ethyl-diamine-N,N,N′,N′-tetraacetate and ammonium thiosulfate and thereafter drying said material.

3,591,381

STABILIZED DIAZOTYPE COMPOSITION

William C. Gray and Frederick A. Stahly, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 31, 1967, Ser. No. 663,470

Int. Cl. G03c *1/60*

U.S. Cl. 96—75 **5 Claims**

The fading of azo dyes is inhibited by the presence of certain hindered phenols which are substituted in the 2-position and in the 4-position. These hindered phenols are particularly useful in diazotype reproduction media, especially the "two component" media containing a diazonium salt, a blue coupler and a yellow coupler in proportions sufficient to yield a neutral image after exposure and development.

3,591,382

USE OF FINE GRAIN EMULSION WITH COARSE GRAIN EMULSION TO REDUCE IMAGE SPREAD

Allan G. Millikan, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 648,237, June 23, 1967. This application May 15, 1968, Ser. No. 729,432

Int. Cl. G03c *1/76*

U.S. Cl. 96—68 **9 Claims**

Photographic elements having coated on one side of a support: (1) an antihalation layer; (2) a fine grain silver halide emulsion layer; and (3) a coarse grain silver halide emulsion image recording layer which preferably contains a photographic color-former, exhibit low image spread.

3,591,383

COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL CONTAINING CYAN COUPLER

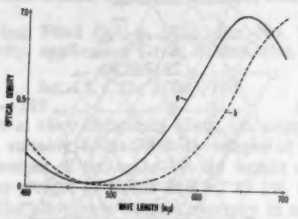
Makoto Yoshida, Yasusuhi Oishi, and Momotoshi Tsuda, Kanagawa, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Oct. 14, 1968, Ser. No. 767,171

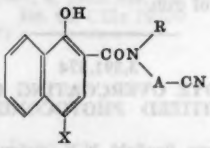
Claims priority, application Japan, Oct. 13, 1967, 42/65,830

Int. Cl. G03c *1/40, 7/32*

U.S. Cl. 96—74 **9 Claims**



A color photographic material having a light-sensitive silver halide emulsion layer containing a cyan coupler yielding a dye having its main absorption in a suitable red wave length region and having a lowered green absorption. The coupler is represented by the following formula:



The representative moieties set out above are specifically defined in the specification.

3,591,384

SILVER HALIDE EMULSION CONTAINING NAPHTHAMIDE PHOTOGRAPHIC COUPLERS

Alberto Guzzi and Remo Magagnoli, Ferrania, Italy, assignors to Societa per Azioni Ferrania, Milan, Italy

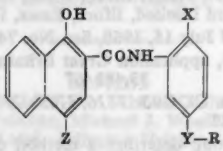
Filed Jan. 31, 1968, Ser. No. 701,995

Claims priority, application Italy, Feb. 15, 1967, 34,846/67

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **6 Claims**

This invention relates to compounds useful as photographic couplers having the general formula:



wherein X is alkyl, Y is either carbonyl or sulfonyl, R is alkyl having from 5 to 20 carbon atoms and Z is hydrogen or halogen. The invention also relates to the use of the abovementioned compounds in photographic emulsions.

3,591,385

SILVER HALIDE EMULSIONS SENSITIZED WITH A COMBINATION OF SULFUR AND SELENIUM FOR COLOR PHOTOGRAPHY

Francis J. Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,418
Int. Cl. G03c 1/28
U.S. Cl. 96—107 14 Claims

Chemical sensitization of a photographic silver halide emulsion containing a color-forming coupler with a combination of labile sulfur with labile selenium provides a synergistic increase in speed. A photographic silver halide emulsion containing a color-forming coupler and sensitized with a combination of a sulfur sensitizer, such as sodium thiosulfate, with a selenium sensitizer, such as dimethyl selenourea, provides a synergistic increase in speed and other desired sensitometric properties.

3,591,386

LITHOGRAPHIC ELEMENT AND NOVEL POLYMERS CONTAINED THEREIN

Thomas I. Abbott, Donald A. Smith, and Robert H. Cunningham, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 18, 1968, Ser. No. 714,034
Int. Cl. G03c 1/72
U.S. Cl. 96—114 16 Claims

This invention relates to novel lithographic elements which contain a polymer which comprises (1) units of an oleophobic monomer and (2) units of a monomer containing hardenable groups thereon. In one aspect this invention relates to novel polymers which can be used in lithographic elements, said polymers comprising (1) units of a vinyl pyridinium compound and (2) units of a monomer containing hardenable groups which can be reacted with photographic hardening agents to increase the molecular weight of said polymer.

3,591,387

SILVER HALIDE EMULSIONS COMPRISING POLYMERIC ACRYLAMIDES AS SENSITIZING ADDITIVES

David Philip Brust, Louis Morton Minsk, and Edward Peter Abel, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 2, 1969, Ser. No. 812,882
Int. Cl. G03c 1/72, 5/24
U.S. Cl. 96—114 22 Claims

Photographic silver halide compositions and elements having improved covering power and sensitomeric properties, obtained by employing polymeric additives in a photographic binder are disclosed. Said polymers comprise recurring N-[tris(hydroxymethyl)methyl] acrylamide units. Processes for effecting said improved properties and novel polymers are also disclosed.

3,591,388

PURIFICATION OF MICROBIAL RENNETS

Huibert Cornelis Theüs Moelker and Rutger Matthijsen, Oss, Netherlands, assignors to Organon Inc., West Orange, N.J.

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,941
Claims priority, application Netherlands, Nov. 25, 1967, 6716065
Int. Cl. A23c 19/02; C07g 7/02
U.S. Cl. 99—116 7 Claims

The invention relates to a process for the purification of microbial rennets, contaminated by unspecific proteolytic enzymes, which are capable not only to coagulate or cloth milk, but also to digest the caseins of the obtained curdle, thus giving rise to a bitter flavour during the aging process of the cheese. The present process comprises contacting the impure rennet with an absorbing silicate at a pH between 3 and 9, by which the taste spoiling, unspecific enzymes are selectively absorbed. In this way the quality of microbial rennets can considerably be improved.

3,591,389

GELLING FISH FOOD COMPOSITION

Earl Schneider, Rego Park, N.Y., assignor to Wardley Products Co., Inc., Long Island City, N.Y.

No Drawing. Filed Sept. 5, 1968, Ser. No. 757,771
Int. Cl. A23k 1/00
U.S. Cl. 99—3 6 Claims

A gelling fish food composition composed of an edible food substance, a binder, guar gum, and a chelating agent.

3,591,390

TREATMENT OF COTTAGE CHEESE CURD

Gary D. Flickinger and Edwin G. Stimpson, Northbrook, Ill., assignors to National Dairy Products Corporation, New York, N.Y.

No Drawing. Filed Apr. 29, 1968, Ser. No. 725,141
Int. Cl. A23c 19/00
U.S. Cl. 99—115 8 Claims

A method is provided for treating cottage cheese or similar cheese so as to provide the desired texture in the finished product. In accordance with the method, an agent is added to the cottage cheese curd so as to reduce the firmness. The agent may also be used to provide desired texture of the curd when acidic materials are added to the cottage cheese curd. The agents used to texture the cottage cheese curd are selected from phosphate or citrate compounds or mixtures thereof.

3,591,391

COMPOUND SEASONING

Shukuo Kinoshita and Iwao Matsuda, Tokyo, and Akio Shiga and Hideyuki Furukawa, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed May 27, 1964, Ser. No. 370,723
Claims priority, application Japan, June 7, 1963, 38/29,274
Int. Cl. A23l 1/22
U.S. Cl. 99—140 9 Claims

A seasoning made up of crystalline monosodium glutamate having incorporated in the crystals thereof a flavor enhancing minor proportion of di-sodium 5'-guanylate, di-sodium 5'-inosinate or mono-sodium aspartate.

3,591,392

HIGH ALUMINA BRICK AND METHOD OF MAKING

Wate T. Bakker, Severna Park, Md., assignor to General Refractories Company, Philadelphia, Pa.

No Drawing. Filed July 1, 1968, Ser. No. 741,333
Int. Cl. C04b 35/10, 35/18
U.S. Cl. 106—62 20 Claims

To a high alumina brick batch mix containing from about 85 to about 95% of alumina and from about 5 to about 15% of silica, based on the combined weight of said alumina and silica, including the usual small amounts of impurities associated with the alumina and silica, are added a lithium compound and at least one of an alkaline earth metal compound and iron oxide, the total of such additions being materially less than 1%, by weight, based on 100 parts of said combined alumina and silica, to improve the strength and volume stability of the resulting brick without adversely affecting its refractoriness under load.

3,591,393
INSULATING FIRE BRICK
Adam Smith Rankine, Martinsville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,293
Int. Cl. C04b *21/06, 43/00*
U.S. Cl. 106—67 10 Claims

A lightweight insulating refractory composition, or brick thereof, of improved strength characteristics for high temperature service comprising the fired product of kaolin clay, pyrophyllite, grog, and sawdust, containing therein particulate pre-fired mixture of gypsum and kaolin.

3,591,394
METHOD OF PRODUCTION OF INJECTION MORTAR OR POROUS CONCRETE
Kurt Diggelmann, Zurich, and Robert Serena, Konlz, Bern, Switzerland, assignors to Kaspar Winkler & Co., Inhaber Dr. F. A. Schenker-Winkler & Dr. R. Burkard-Schenker, Zurich, Switzerland
No Drawing. Filed Feb. 27, 1968, Ser. No. 708,494
Claims priority, application Germany, Mar. 3, 1967, W 43,482
Int. Cl. C04b *21/00, 13/26*
U.S. Cl. 106—87 5 Claims

The method for producing injection mortar or porous concrete comprises adding to a cement containing mixture a nitrogen delivering compound in an amount of of 0.1% to 6% of the weight of the cement causing an expansion or formation of pores in said mixture. The nitrogen delivering compound preferably will be a hydrazine derivative, such as hydrazine sulfate or dihydrazine sulfate, or a benzene-sulfohydrazine, a stabilised diazonium salt, or a diazotized nitro-aniline, and an activator for the nitrogen delivering compound may be added.

3,591,395
HYDRAULIC CEMENTITIOUS COMPOSITIONS REINFORCED WITH FIBRILLATED PLASTIC FILM
Johannes J. Zonsveld, Woking, and Ronald Francis Salmons, Hampton Hill, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 660,186, Aug. 14, 1967. This application June 24, 1970, Ser. No. 49,531
Claims priority, application Great Britain, Aug. 15, 1966, 36,431/66
Int. Cl. C04b *13/24, 31/34*
U.S. Cl. 106—99 12 Claims

Concrete, mortar, cement or plaster of Paris are reinforced to provide products of improved bending strength by addition of up to 2% by weight of fibrillated polypropylene film to the mass prior to or during mixing.

3,591,396
NOVEL COMPOSITIONS CONTAINING TETRAISOPROPYLNAPHTHALENE
Seymour W. Ferris, deceased, late of Vincentown, N.J., by Lucretia G. Ferris, executrix, Vincentown, N.J., and Ernest P. Black, West Chester, and Andrew J. Bozzelli, Springfield, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Original application Nov. 24, 1967, Ser. No. 685,712, now Patent No. 3,474,925. Divided and this application Mar. 5, 1970, Ser. No. 18,358
Int. Cl. C08h *11/00*
U.S. Cl. 106—230 5 Claims

This invention relates to novel compositions having improved resistance to liquid water. Specifically the invention relates to slow release fertilizer compositions containing one or more isomers of tetraisopropylnaphthalene.

3,591,397
IRON TRICARBONYL COMPLEXES OF ELEOSTEARIC ACID ESTERS AND COMPOSITIONS CONTAINING THEM
Michael Cais, Ahuza, Haifa, Israel, and Edwin N. Frankel, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed July 25, 1968, Ser. No. 747,471
Claims priority, application Israel, Aug. 18, 1967, 28,524
Int. Cl. C07f *15/02*; C09d *3/34*; C11c *3/00*
U.S. Cl. 106—264 6 Claims

The present invention concerns new iron tricarbonyl complexes of eleostearic acid esters and compositions containing them. The chemical bonds in the complexes with which the invention is concerned are of the π-electron type. In the following description and appended claims these π-bonded complexes will be referred to for short as "complexes."

3,591,398
PROCESS FOR PRODUCING TITANIUM DIOXIDE PIGMENTS
Albert H. Angerman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 5, 1968, Ser. No. 719,246
Int. Cl. C09c *1/36, 3/00*
U.S. Cl. 106—300 4 Claims

Titanium dioxide pigment is treated by maintaining a water slurry of the pigment at a pH of below about 7 and applying silica in an amount of 3% to 10% by weight, based on the pigment, by adding a solution of soluble silicate to the water slurry. The resultant slurry is adjusted to a pH of from 6–8 and alumina in an amount of 1% to 10% by weight, based on the pigment, is precipitated in the slurry. The pigment produced by this treatment has good hiding power and film integrity.

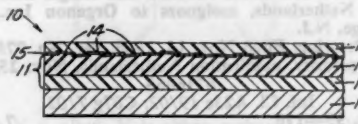
3,591,399
CORROSION INHIBITIVE CADMIUM PHOSPHATE-CHROMATE PIGMENT
David B. Boles, Chicago, and William P. McDonald, Park Forest, Ill., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,486
Int. Cl. C09c *1/10, 1/34*; C08b *17/04*
U.S. Cl. 106—301 2 Claims

A pigment composition for preventing corrosion of aluminum comprising:

	Percent by weight
CdO	49.4
CrO_3	19.3
P_2O_5	16.5
KOH	14.8

and the method of producing it.

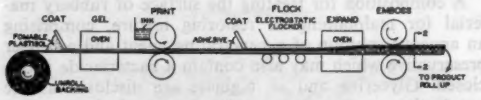
3,591,400
HEAT-REFLECTIVE FABRICS
Philip V. Palmquist, Maplewood Village, and Nelson Jonnes, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 6, 1967, Ser. No. 674,070
Int. Cl. B44c *1/14*; B32b *27/14*
U.S. Cl. 117—3.3 5 Claims



A heat-reflective fabric, and transfer sheet material for application to a base fabric to make heat-reflective fabric. A continuous layer of partially overlapping reflective flakes adhered to, and carried on, a layer of elastomeric

material covers the outside of the fabric. The transfer material includes a fabric-adhesive layer by which the elastomeric, flake-covered layer is attached to the fabric.

3,591,401
FLOCKED, FOAMED, EMBOSSED SURFACE COVERING
Robert W. Snyder, Lancaster, and Daniel M. Sigman, Jr., Strasburg, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 11, 1969, Ser. No. 806,082
Int. Cl. B32b 5/32; B44c 1/08; D06n 3/08
U.S. Cl. 117—9 8 Claims

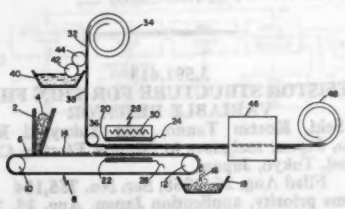


A surface covering for floors, walls, and the like. The product is made by forming a gelled, foamable but unfoamed plastisol sheet preferably of a vinyl resin and a plasticizer therefor, and containing the blowing agent, stabilizers, and other conventional ingredients. A decorative coating is applied, preferably by printing, to the surface of the gelled, foamable plastisol sheet. A transparent adhesive layer, preferably of a vinyl resin, is applied to the gelled, foamable plastisol layer on top of the printed decorative coating. Flock is then applied, the flock adhering to the sheet by means of the transparent adhesive layer. The system is then heated to fuse and expand the plastisol layer to form a foamed layer. The foamed layer carrying the flock is then mechanically embossed in any desired pattern, but preferably in a pattern to simulate a textile carpet, the embossing being sufficiently deep to create permanent impressions in the foamed layer itself. The embossing step enhances the appearance of the printed decorated coating.

3,591,402
PRINTING ON POLYURETHANE SURFACES
Cyrus L. Blackfan, North Olmstead, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Filed Oct. 1, 1969, Ser. No. 862,966
Int. Cl. B41m 1/30
U.S. Cl. 117—12 9 Claims

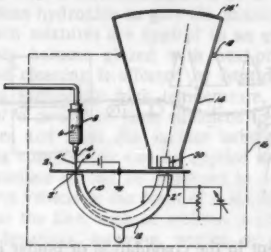
An improved process for printing on polyurethane surfaces requires first printing with ink on the polyurethane surface and thereafter heating to a temperature above 212° F.

3,591,403
ELECTROSTATIC FLOCKING
Richard W. Sheehan, Longmeadow, Mass., assignor to Bigelow-Sanford, Inc., Thompsonville, Conn.
Filed Dec. 5, 1968, Ser. No. 781,327
Int. Cl. B05b 5/00
U.S. Cl. 117—17 2 Claims



In electrostatic flocking method means is provided for supplying heat to the attracting electrode in addition to any heat supplied by current due to the potential difference between the electrodes.

3,591,404
METHOD OF MAKING VIEWING SCREENS FOR CATHODE RAY TUBES
Hans W. Heil and Burton W. Scott, Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 23, 1968, Ser. No. 786,296
Int. Cl. H01j 31/20
U.S. Cl. 117—17.5 7 Claims

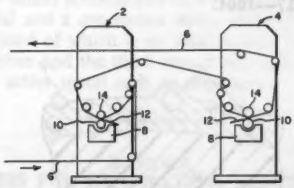


Method of obtaining an electrically energized stream having the same energy per unit charge and containing phosphor material for use in fabricating a viewing screen for a cathode ray tube wherein the base member for the viewing screen is scanned with the phosphor-containing stream.

3,591,405
CLEANING AND WHITENING SOFTENER COMPOSITIONS
Charles Bruce McCarty, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Dec. 29, 1967, Ser. No. 694,368
Int. Cl. B44d 5/06; D06m 13/46
U.S. Cl. 117—33.5 7 Claims

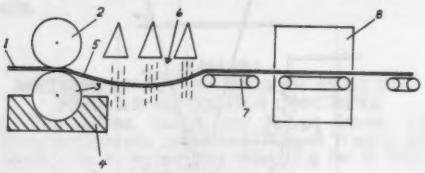
Cleaning and whitening softener formulations containing from about 4 to 50% quaternary ammonium softener, 25 to 94% of certain polyphosphonic acid salts, 0 to 31% of an alkali metal polyacetate sequestering agent and 0.01 to 4% of an optical brightener.

3,591,406
PROCESS FOR BAND-TINTING PLASTICIZED POLYVINYL BUTYRAL SHEETING AND PRODUCT THEREFROM
Robert E. Moynihan, Lowell, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 766,070, Oct. 9, 1968. This application Oct. 17, 1969, Ser. No. 867,228
Int. Cl. B44d 1/24, 5/00
U.S. Cl. 117—37 2 Claims



Plasticized polyvinyl butyral sheeting is uniformly tinted without requiring normalization by depositing ink in a myriad of dots substantially coextensively on both sides of the sheeting. The myriad of dots can be in a band, and the resultant band-tinted sheeting is useful as safety glass interlayer.

3,591,407
BONDED NON-WOVEN FABRIC
Peter Petersik, Lutzelsachsen, Bergstrasse, and Adolf Graber, Weinheim an der Bergstrasse, Germany, assignors to Carl Freudenberg, Patentabteilung, Weinheim an der Bergstrasse, Germany
Filed Sept. 9, 1968, Ser. No. 758,387
Claims priority, application Germany, Sept. 26, 1967, P 16 19 054.8
Int. Cl. B44d *1/44*
U.S. Cl. 117—46 5 Claims

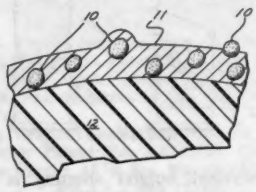


Improvement in the coagulation of binder impregnated nonwoven fabrics by passing the nonwoven fabric impregnated with a coagulatable binder into operative contact with an open flame whereby to rapidly coagulate at least a substantial portion of the binder.

3,591,408
PROCESS FOR COLORING GLASS FIBERS AND FABRICS
Alfred Marzocchi, Cumberland, R.I., and David W. Boyes, Bedford, Va., assignors to Owens-Corning Fiberglas Corporation
No Drawing. Filed Dec. 6, 1967, Ser. No. 688,309
Int. Cl. C03c *25/02*
U.S. Cl. 117—54 12 Claims

The coloring of glass fibers by treatment of the glass fibers with the combination of an amino and/or epoxy silane, its silanol or polysiloxane and a fiber reactive Procilan dye or Procion dye having groupings that react with the amino or epoxy groups of the organo silicon compound to form an organo silicon-dye compound that becomes strongly anchored to the glass fiber surfaces with sufficient dye concentration to impart the desired color intensity.

3,591,409
PROCESS FOR COATING RESIN GRANULES BY HIGH INTENSITY MECHANICAL BLENDING AND PRODUCT OBTAINED THEREBY
Norman E. Aubrey, South Hadley, Robert E. Beaulieu, Monson, and William J. Hall, Brimfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 624,733, Mar. 21, 1967. This application July 28, 1969, Ser. No. 845,384
Int. Cl. B44d *1/12*; B32b *5/30*
U.S. Cl. 117—100C 5 Claims



A method for preparing coated resin granules wherein a mixture of resin ganules, a wax and a particulate material is subjected to high-intensity blending at elevated temperatures and the product produced thereby. The product thermoplastic resin composition is characteristically dry and substantially dust-free. The wax with the particulate solid material embedded therein substantially uniformly distributed over the surfaces of individual resin particles.

3,591,410
TREATMENT OF RUBBERY MATERIAL
Edward O. Ross, 6118 Sadring Ave., Woodland Hills, Calif. 91364
No Drawing. Filed Nov. 15, 1967, Ser. No. 683,159
Int. Cl. C08c *1/06*; C08k *1/28*
U.S. Cl. 117—139 10 Claims

A composition for treating the surface of rubbery material for maintaining or restoring texture, comprising an aqueous solution of a penetrating agent and a rubber preservative which may also contain a bacteriacide is disclosed. Glycerine and an alginate are disclosed as the penetrating agent and preservative, respectively.

The term rubbery material is meant to include not only products made entirely of rubber but also cloth impregnated with rubber and/or over-coated therewith, as well as mixtures of rubber and other non-rubber materials.

3,591,411
COATED DRYING ELEMENT
Paul W. Frulhaber, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Dec. 26, 1967, Ser. No. 693,139
Int. Cl. D21h *1/28*
U.S. Cl. 117—155UA 6 Claims

A flexible, liquid permeable, drying element, such as a thin coating, containing an organic desiccant, typically with a synthetic, polymeric binding agent, is used for removing a liquid, such as water, from a permeable solid, such as from one or more layers of a photographic element containing water. For instance, a thin coating of an organic desiccant, such as a mixture of ethylene oxide polymers, removes a large percentage of the water from a wet photographic emulsion layer. An inorganic desiccant and/or other addenda can be present in the thin coating.

3,591,412
COATED PAPER
Gesienus Smit, Sappemeer, Netherlands, assignor to Scholten Research N.V., Groningen, Netherlands
No Drawing. Filed Nov. 14, 1967, Ser. No. 683,019
Claims priority, application Japan, Nov. 15, 1966, 41/75,164
Int. Cl. D21h *1/24, 1/28*
U.S. Cl. 117—156 15 Claims

Paper is rendered wet-rub resistant by being provided with a coating containing

(a) a pigment consisting essentially of clay and about 3–100% of satin white, and

(b) a binder consisting at least partly of a depolymerized starch phosphate ester.

3,591,413
RESISTOR STRUCTURE FOR THIN FILM VARIABLE RESISTOR
Yasuo Seki, Koetsu Tanno, and Takayuki Kurihara, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Aug. 26, 1968, Ser. No. 755,104
Claims priority, application Japan, Aug. 25, 1967, 42/55,081
Int. Cl. H01c *7/00*
U.S. Cl. 117—217 18 Claims

A thin film resistor structure for a variable resistor is described. The structure exhibits a low contact resistance

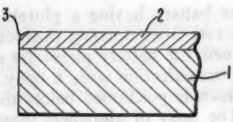
and good temperature stability by employing a multi-layered construction. A tantalum nitride thin film layer is formed over an insulator substrate and is covered in turn with a thin film layer made of a low-resistive and anti-oxidation material. The composite multi-layered structure is then subjected to a heat treatment to diffuse or scatter the low-resistive and anti-oxidation material in a surface region of the tantalum nitride. The final heat treated structure exhibits a low noise level when employed with a brush for obtaining a variable resistor. The heat treatment is further employed to impart a particular temperature coefficient of resistance to the structure. Several embodiments and examples are shown.

3,591,414

METHOD FOR PRODUCING A MAGNETIC RECORDING MEDIUM

Yuichi Kono, Goro Akashi, and Masaaki Fujiyama, Kanagawa, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed July 5, 1968, Ser. No. 742,602
Claims priority, application Japan, July 4, 1967, 42/43,006, 42/43,007
Int. Cl. H01f *10/00*
U.S. Cl. 117—237 10 Claims



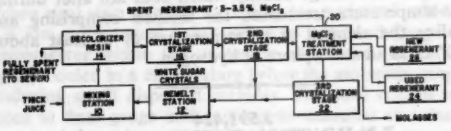
The formation of drop-out in magnetic recording or reproducing of a magnetic recording tape caused by scraps of the magnetic recording layer on the tape can be prevented by treating the edges of the magnetic recording layer, after cutting the wide magnetic recording sheet into desired width, with an organic solvent to smoothen the edges. A resinous composition may be coated on the edges instead of the solvent treatment.

3,591,415

ION EXCHANGE REGENERATION

James F. Zievers, La Grange, and Charles J. Novotny, Hickory Hills, Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Mar. 18, 1968, Ser. No. 713,861
Int. Cl. C13d *3/14*; C13f *1/12*; B01d *41/02*
U.S. Cl. 127—14 4 Claims



A magnesium cation exchange resin used for potassium removal in a sugar refining process is regenerated with a solution of magnesium chloride which is thereafter used to regenerate an ion exchange resin used as a decolorizer in the same refining process.

3,591,416

METHOD OF CLEANING OVENS

Carl E. Johnson, Glen Ellyn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,245
Int. Cl. C23g *1/00*; B08b *7/00*
U.S. Cl. 134—2 3 Claims

An oven wall cleaning composition having as the active cleaning agent an oxidizing salt such as sodium nitrate, or other alkali metal or alkaline earth metal, nitrate, in combination with a sufficient amount of a caustic alkali, such as sodium hydroxide to give the mixture an alkaline reaction. Such mixtures are applied to an oven wall surface that has become glazed with heat-produced fatty residues, and cleaning is effected by heating the treated surface to a sufficiently high temperature, above about 230° C., for a period of time sufficient to burn off the fatty residues and leave the surface substantially clean. The cleaning composition can be applied dry to a lower horizontal surface or can be dispersed in a carrier, such as an aqueous vehicle in the form of a saturated solution, slurry, gel or the like, with or without a surfactant, and applied by brushing, spraying, wiping or rubbing onto the other oven wall surfaces.

3,591,417

NICKEL-CADMIUM STORAGE BATTERY

Peter Ness, Kelkheim, and Antony Oliapuram, Frankfurt am Main, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,804
Claims priority, application Germany, Apr. 11, 1968, P 17 71 151.2
Int. Cl. H01m *43/04*
U.S. Cl. 136—24 4 Claims

An improved nickel-cadmium storage battery is constructed with the carrier of the positive electrode made of a diamagnetic or paramagnetic material, which is not oxidized when the battery is charged, for instance, gold or gold-plated copper, and with the carrier of the negative material made of a diamagnetic or paramagnetic substance, for instance copper.

3,591,418

ELECTROCHEMICAL CELL FOR THERMAL BATTERIES HAVING TRANSITION METAL FLUORIDE CATHODE WITH METAL AND AN ALKALI METAL FLUORIDE ELECTROLYTE

Raymond A. Sutula, Hyattsville, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 5, 1969, Ser. No. 796,667
Int. Cl. H01m *13/00*
U.S. Cl. 136—83 6 Claims

An electrochemical cell for construction of a thermal battery formed of three layers of pressed pellets, the first one of which is composed of a transition metal fluoride material and a conductive metal such as silver powder, the second of which is an alkali metal fluoride electrolyte mixture and the third one of which is an electrochemically active metal such as magnesium.

3,591,419

PROCESS FOR GENERATING ELECTRICAL ENERGY USING MANGANESE DIOXIDE WITH OXIDIZING GAS

Charles Eugene Hamilton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 27, 1968, Ser. No. 740,584
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 6 Claims

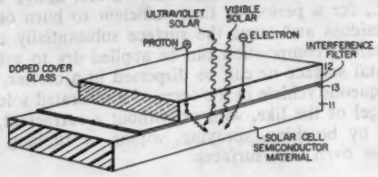
A fuel cell and method of its operation wherein organic materials are contacted with a suitable oxidizing system

in the presence of an electron-collecting system to produce electrical current.

3,591,420
SOLAR CELL

Elmer R. Streed, Los Altos, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 6, 1969, Ser. No. 797,219
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 6 Claims

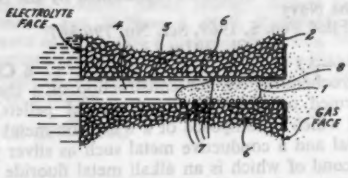


A solar cell utilizes phosphors in the cover glass which are excited to fluorescence by solar ultraviolet radiation and particulate radiation. This fluorescent energy passes through the interference filter for utilization in the solar cell, whereas the ultraviolet and other radiation would not normally be converted to electrical energy because the wavelength is not within the spectral response limits of the solar cell.

3,591,421
POROUS ELECTRODE HAVING LYOPHOBIC MATERIAL AFFIXED TO THE WALLS OF THE PORES

Hans A. Schultze, Neuenhain, and Dieter Spahrbier, Frankfurt am Main, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 26, 1966, Ser. No. 581,819
Claims priority, application Germany, Sept. 25, 1965, V 29,399
Int. Cl. H01m *13/00*
U.S. Cl. 136—120 8 Claims

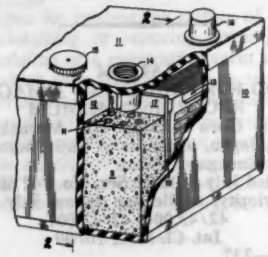


A porous gas diffusion electrode is made up of a single layer of porous material having two opposite faces and pores extending from one face to the opposite face of the electrode. These pores open through the two opposite faces. The walls of the pores are provided with particulate lyophobic material. At the wall area of the pores near their openings at one face of the electrode, the particulate lyophobic material is densely affixed to the wall. The density of the distribution of the particulate lyophobic material decreases along the length of the pores to essentially no coverage adjacent the pore openings at the opposite face of the electrode.

3,591,422
WATER-ACTIVABLE BATTERY UTILIZING ABSORBENT OPEN-CELLED MATERIAL

Herbert A. Bernholtz, Sylvania, and John P. Badger, Genoa, Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Apr. 3, 1969, Ser. No. 812,989
The portion of the term of the patent subsequent to Nov. 17, 1987, has been disclaimed
Int. Cl. H01m *45/00*
U.S. Cl. 136—162 14 Claims



A storage battery having a plurality of enclosed cells with a separate filler opening positioned over each cell. With each cell, the battery plates are separated from, but in liquid communication with, a body of liquid-absorbent material which is positioned below the filler opening for that cell. The body of absorbent material is of sufficient size and absorbency to retain an amount of concentrated battery acid sufficient to fully activate the cell when water is added through the filler opening to release the concentrated acid from said absorbent body and to fill the battery cell. The absorbent material may be comprised of an open-celled, foamed synthetic material such as a phenolic resin.

3,591,423
METHOD OF MANUFACTURING SEMICONDUCTOR ELEMENTS AND SEMICONDUCTOR INTEGRATED CIRCUITS

Nobuo Kawamura and Kazuo Kamimura, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 11, 1968, Ser. No. 712,212
Claims priority, application Japan, Mar. 20, 1967, 42/17,298
Int. Cl. H01l *7/06, 7/34*
U.S. Cl. 148—1.5 3 Claims

A method is provided for manufacturing semiconductor elements and semiconductor integrated circuits of the silicon type having a silicon dioxide film wherein a stable silicon-silicon dioxide system is produced having a low surface charge density which does not alter during bias-temperature treatment, the method comprising annealing the element at a temperature of at least about 850° C. in an atmosphere of hydrogen.

3,591,424
P-N JUNCTION PHOTOEMITTERS

Samuel A. Ward, Riverside, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 26, 1969, Ser. No. 836,874
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 9 Claims

A method of making photoemitters by ion implantation is disclosed. An n-type guard ring is diffused into the face of a p-type crystalline wafer, an n-type region is implanted within the guard ring by an ion bombardment, the

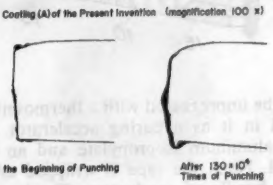
p-n junction is annealed until the required reverse bias characteristic exists, and the junction is surface cesiated to obtain photoemissivity.

3,591,425

COATING METHOD FOR ENHANCING PUNCHABILITY OF STEEL SHEET

Hiroshi Shimanaka, Toshio Irie, and Toshikuni Tanda, Ashiya-shi, Japan, assignors to Kawasaki Steel Corporation, Fukiai-ku, Kobeshi, Japan

Filed Oct. 9, 1968, Ser. No. 766,266
Claims priority, application Japan, Oct. 18, 1967, 42/67,027
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 7 Claims



A coating on the surface of steel sheet such as electrical steel sheet including silicon steel and low carbon iron to improve the punchability of the steel sheet, said coating comprises chromic acid, calcium and an organic polyhydric alcohol.

3,591,426

CORROSION RESISTANT BERYLLIUM

Patricia M. O'Donnell, North Olmsted, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,006
Int. Cl. C23f 1/00
U.S. Cl. 148—6.3 5 Claims

Oxidation of beryllium is prevented by a fluoride coating on the surface.

3,591,427

METHOD OF PROCESSING STEEL SHEET OR STRIP

Henry J. Hansen, Jr., Portage, Ind., assignor to United States Steel Corporation

No Drawing. Original application July 25, 1966, Ser. No. 567,357. Divided and this application July 25, 1969, Ser. No. 845,029
Int. Cl. C21d 1/30, 9/46
U.S. Cl. 148—12 5 Claims

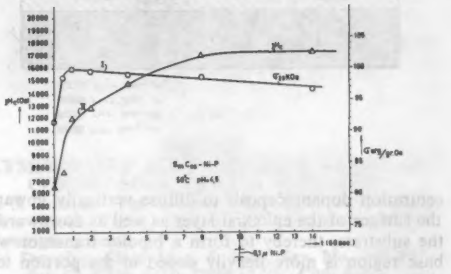
A method of producing fully-hard, stress-relieved plain carbon steel strip suitable for use as can end-stock wherein a low carbon steel is hot rolled to hot band gauge at temperatures within the austenitic range and thereafter rapidly cooled to a temperature below the austenitic range producing small dispersed carbides. The steel is cold reduced to final gauge and continuous annealed at a temperature below about 1050° F. to relieve rolling stresses but avoid substantial recrystallization. On the other hand, a steel strip suitable for use as can body stock, i.e. having less strength but greater formability, is produced if the steel cooled slowly after hot rolling to cause large agglomerated carbides, and if the final continuous anneal is at a temperature below about 1025° F., again to relieve rolling stresses but avoid substantial recrystallization.

3,591,428

BASIC SUBSTANCE FOR THE MANUFACTURE OF A PERMANENT MAGNET

Kurt Heinz Jurgen Buschow, Pieter Aart Naastepad, Wilhelmus Antonius Johannes Josephus Velge, and Johannes Hendrikus Nicolaas van Vucht, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 26, 1968, Ser. No. 778,981
Claims priority, application Netherlands, Dec. 21, 1967, 6717442
Int. Cl. H01f 1/08
U.S. Cl. 148—31.57 12 Claims



A permanent magnet material is disclosed having a large intrinsic coercive force ($_IH_c$) and thus strongly resistant to demagnetization and a large energy product $-(BH)_{max}$. This material consists of fine particles having permanent magnet properties and consisting essentially of a compound M_5R having a hexagonal crystal structure. M in this compound is cobalt or a combination of cobalt with one or more of the elements Fe, Ni, and Cu while R is a rare earth metal (which term includes Y) and/or Th. These particles are surrounded with a metallic layer.

3,591,429

SULFUR DOPED RECRYSTALLIZED InSb FILMS

Arthur R. Clawson and Harry H. Wieder, Riverside, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed July 25, 1968, Ser. No. 747,511
Int. Cl. H01l 7/36; C23c 13/00; C01g 15/00
U.S. Cl. 148—174 3 Claims

A process by which recrystallized films of semi-conducting InSb can be donor doped at a predetermined impurity level. Pure indium from which the InSb films are prepared is saturated with sulfur (a donor impurity in InSb) by diffusion. 99.999% pure sulfur and 99.999% pure indium are sealed in vacuum in separate compartments of a pyrex ampoule and heated at 150° C. for several days to saturate the indium with sulfur. A layer of In_2S_3 formed on the indium is removed in a Na_2S solution. The impurity level in the InSb film is controlled by diluting the sulfur doped indium with 99.9999% pure indium in the necessary proportion for the doping level desired; this permits introducing donor impurity levels up to 8×10^{18} cm.$^{-3}$.

3,591,430

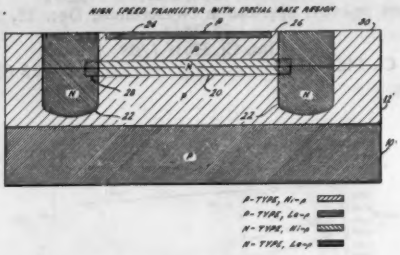
METHOD FOR FABRICATING BIPOLAR PLANAR TRANSISTOR HAVING REDUCED MINORITY CARRIER FRINGING

Earl S. Schlegel, Lansdale, Pa., assignor to Philco Ford Corporation, Philadelphia, Pa.

Original application Oct. 14, 1965, Ser. No. 495,927. Divided and this application Nov. 14, 1968, Ser. No. 794,452
Int. Cl. H01l 7/36
U.S. Cl. 148—175 4 Claims

Method of fabricating a bipolar planar transistor having reduced minority carrier fringing comprising forming

low-concentration, slow-diffusing and surrounding high-concentration faster-diffusing base dopant deposits on the surface of the higher-resisitivity layer of a two-layer collector-doped substrate, growing an emitter-doped epitaxial layer on the substrate, and causing the high concentration dopant deposit to diffuse vertically upward to the surface of the epitaxial layer as well as downward into the substrate, thereby to form a bipolar transistor whose base region is more heavily doped in the portion to the sides of emitter region than under the emitter region.



3,591,431

DIFFUSED P-N JUNCTION DIODES AND METHODS OF DIFFUSION THEREFOR

George R. Pruett, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Application May 14, 1964, Ser. No. 370,145, which is a division of application Ser. No. 159,698, Dec. 15, 1961. Divided and this application Apr. 30, 1969, Ser. No. 820,519

Int. Cl. H01l 7/44

U.S. Cl. 148—186 5 Claims

A method of making a photovoltaic diode by diffusing copper into one surface of an N-type conductivity body of indium and diffusing cadmium into the same surface to form a p+pn device.

3,591,432

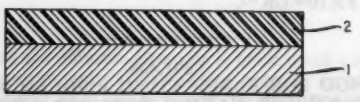
PROCESS FOR SURFACE TREATMENT OF LEAD AND ITS ALLOYS

Hargovind N. Vazirani, Passaic Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 8, 1968, Ser. No. 727,461

Int. Cl. C23f 1/00, 3/04, 7/26

U.S. Cl. 156—3 9 Claims



This is a method for the surface treatment of lead and its alloys which results in an improved joint subsequently formed between the metal and organic materials and comprises treatment in an aqueous solution containing dichromate ions and hydrofluoric, fluoboric, or acetic acid.

Described embodiments of the surface treatment include use of the solution both as a liquid and as a gel.

3,591,433

METHOD OF IMPREGNATING A TAPE WITH A THERMOSETTING ETHOXYLIN RESIN MIXTURE

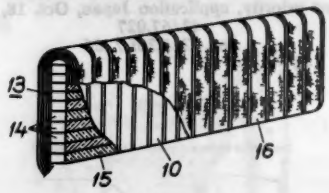
Jostein Andreassen, Ojebyn, Sweden, assignor to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 28, 1968, Ser. No. 741,007

Claims priority, application Sweden, June 29, 1967, 9,634/67

Int. Cl. H01b 13/30

U.S. Cl. 156—53 4 Claims



A tape to be impregnated with a thermosetting resin has incorporated in it as a curing accelerator the reaction product of aluminum isopropylate and an alkyl amino alkyl phenol. Next, the tape is wrapped around a conductor or a bundle of conductors. The tape is then impregnated with a liquid mixture of an ethoxylin resin containing at least two epoxide groups per molecule and at least one anhydride of a polycarboxylic acid which serves as a curing agent. The article is then heated to cure the resin.

3,591,434

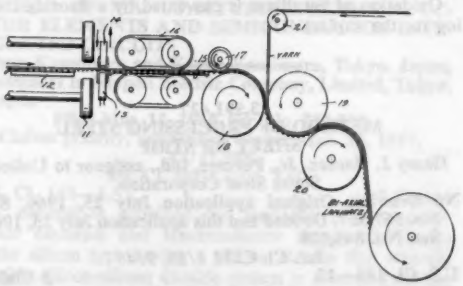
BI-AXIAL LAMINATED NON-WOVEN FABRIC AND METHOD OF MANUFACTURE

Fred W. Hartstein, Afton, Va., assignor to Swirltex, Inc., Afton, Va.

Filed Aug. 21, 1967, Ser. No. 662,070

Int. Cl. B32b 5/12

U.S. Cl. 156—178 1 Claim



A plurality of yarns are laid parallel to one another and conveyed through a group of heated pressure rollers, where the yarns are bonded to a self-supporting thermoplastic film, such as ethylene acrylic acid copolymer, in order to form a uni-axial laminate. The laminate is passed around a chilled roll to stiffen it for additional processing. A predetermined length of laminate is cut and joined along one edge to the corresponding edge of a second uni-axial laminate of similar dimensions by a pair of heat sealing bars. The joined laminate is conveyed by endless belts to a second group of heated pressure rollers where a second group of parallel yarns is cross-laid and bonded to the opposite side of the uni-axial laminate, thus forming a bi-axial laminated non-woven fabric, which is

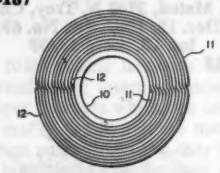
chilled by passing over a chilled roll and is wound on a spool. The yarn employed may be relatively stiff, such as paper. Or, it may be made relatively flexible, by using natural or synthetic fibers such as cotton or rayon. Also, a layer of paper yarn may be laid on one side of the film, and a layer of flexible fibers on the opposite surface. The foregoing abstract is not intended to define the scope of the invention and is only provided to permit a cursory review of the gist of the invention.

3,591,435

METHOD OF PRODUCING DECORATIVE FIBER GLASS TUBING

Richard C. Snyder, Coral Gables, Fla., assignor to Gatorglass Manufacturing Co., Inc., Hialeah, Fla.

Filed July 7, 1969, Ser. No. 839,599
Int. Cl. B65h *81/02*
U.S. Cl. 156—187 2 Claims



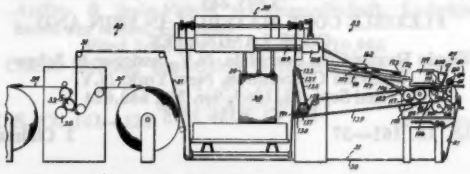
The method of producing a decorative fiber glass tubing by wrapping a pair of different colored fiber glass sheets impregnated with thermosetting plastic and subjecting it to pressure whereby the wrapped tubing is reduced by 30% and the wrapping becomes wrinkled about its periphery. Then after becoming set, the outer surface of the wrapping is cut or ground to any desired depth whereby designs of decorative patterns are effected thereon.

3,591,436

METHOD AND APPARATUS FOR MAKING PRINTED CORRUGATED PAPERBOARD

Charles H. Klein, James K. Haley, and Alfred C. Sides, Cincinnati, Ohio, assignors to Novelart Manufacturing Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 281,600, May 20, 1963. This application Nov. 24, 1969, Ser. No. 872,465
Int. Cl. B31f *1/22*; B32b *31/10*
U.S. Cl. 156—210 21 Claims



Apparatus for making double face corrugated board wherein printed sheets are fed sequentially into combining rolls together with single face paper, the sheets being joined to the single face and thereafter processed in a dryer.

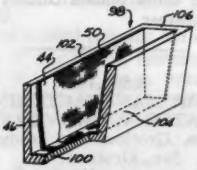
3,591,437

METHOD OF MAKING A PLASTIC BUILDING WALL FIN UNIT

Kenneth A. Schafer, Pittsburgh, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed July 1, 1968, Ser. No. 741,562
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 4 Claims

A prefabricated plastic building wall fin unit comprising a generally U-shaped reinforced plastic shell having bracket means for securing the fin unit to a building wall. Fireproofing material may be applied to the interior surface of the shell. A foraminous reinforcement



may be partially embedded in the shell to provide positive connection for the fireproofing material and to provide structural reinforcement for the shell.

3,591,438

POLYMERIZABLE ACRYLATE COMPOSITION AND CURING ACCELERATOR THEREFOR

Alex S. Toback, West Hartford, and John T. O'Connor, New Haven, Conn., assignors to Loctite Corporation, Newington, Conn.

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,947
Int. Cl. B32b *7/10*; C08f *15/06*; C09j *5/04*
U.S. Cl. 156—310 22 Claims

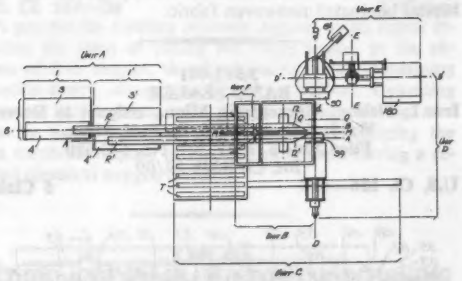
The speed of cure of a peroxy initiated acrylate based adhesive or sealant composition is markedly increased by treating one or more of the surfaces to be bonded with a bonding accelerator containing (a) the condensation product of an aldehyde and a primary or secondary amine and (b) as a reducing activator, either (1) a sulfur-containing free radical accelerator or (2) a compound containing an oxidizable transition metal.

3,591,439

TIRE BUILDING MACHINE HAVING PLURAL SUPPLY POSITIONS AND AN AXIALLY SHIFTABLE DRUM

Jean Leblond and Jean Biet, Compiegne, France, assignors to Uniroyal Englebert France S.A., Paris, France

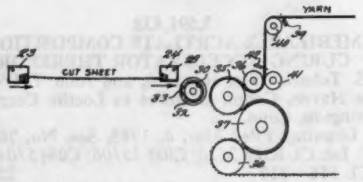
Filed Oct. 3, 1968, Ser. No. 764,664
Claims priority, application France, Oct. 9, 1967, 123,801
Int. Cl. B29h *17/20*
U.S. Cl. 156—396 25 Claims



A tire building machine having a pair of supply mechanisms for simultaneously supplying a pair of continuous strips of breaker material of the same or different physical characteristics, a pair of severing devices which sever the strip into strip portions, a pair of transfer mechanisms for transporting the severed strip portions, respectively, to a pair of spaced locations, and a single breaker building drum which is intermittently shiftable along a fixed axis between three stopped positions two of which coincide with said spaced locations, respectively. After the breaker plies are built up on said building drum at said pair of

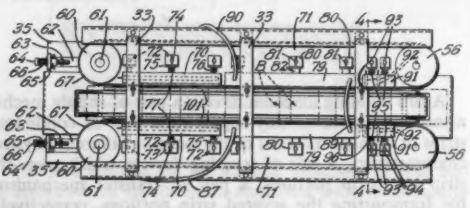
spaced locations a tread applicator mechanism, also located at the second location, applies a strip of tread material around the breaker ply assembly. In the third position of the building drum a transfer ring cooperates therewith for transferring a completed breaker-tread assembly from the building drum onto a carcass supported on a carcass support member.

3,591,440
APPARATUS FOR MANUFACTURING A BIAXIAL LAMINATED NONWOVEN FABRIC
Fred W. Harstein, Grottoes, Va., assignor to Swirltex, Inc., Grottoes, Va.
Continuation-in-part of application Ser. No. 662,070, Aug. 21, 1967. This application Jan. 22, 1969, Ser. No. 793,142
Int. Cl. B64h *61/00*
U.S. Cl. 156—439 **1 Claim**



An apparatus for the manufacturing of biaxial laminated nonwoven fabric which includes means for contacting one surface of a thermoplastic film with a plurality of substantially parallel yarns and means for applying sufficient heat and pressure thereto to bond said yarns to said one surface thereby producing a uniaxial laminate, means for severing a length of said uniaxial laminate, means for contacting the yarn-free surface thereof with a plurality of substantially parallel yarns and means for applying sufficient heat and pressure thereto to bond said yarns to the yarn-free surface thereby producing a biaxial laminate, means for joining this biaxial laminate along one of its edges to one edge of another severed uniaxial laminate produced essentially as described above and means for contacting the yarn-free surface of said other severed uniaxial laminate joined to said biaxial laminate with a plurality of substantially parallel yarns and means for applying sufficient heat and pressure thereto to bond said yarns to said yarn-free surface thereof, thereby producing said biaxial laminated nonwoven fabric.

3,591,441
BAND SEALER
Iver L. Nelson, Minneapolis, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed June 5, 1967, Ser. No. 643,690
Int. Cl. B32b *29/00*
U.S. Cl. 156—498 **5 Claims**



This invention relates to a band type heat sealer for sealing the closure flaps of wax coated cartons and the like and the method of sealing the carton. The sealer includes a heating element in face contact with a band of heat conductive material such as stainless steel capable of transmitting sufficient heat to penetrate the outer layer of paperboard and to melt the coating between the outer layer and an inner layer of paperboard. The sealer includes a cooling element in contact with the band capable of reducing the temperature sufficiently to band the two layers together. The sealer also includes a second heating element in contact with the band capable of heating the surface of the outer layer of coated paperboard sufficiently to free the coating from the band and to glaze the outer surface of the coating on the outer layer, the heat provided by the second heating element being insufficient to penetrate the outer layer of paperboard and affect the band between the layers of paperboard.

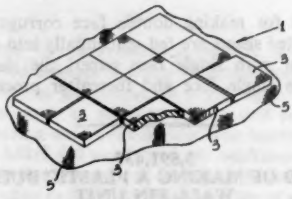
3,591,442
DECORATIVE WREATHS
Andrew J. Matesi, 3742 N. Troy, Chicago, Ill.
Filed Dec. 19, 1967, Ser. No. 691,792
Int. Cl. A47g *33/08*
U.S. Cl. 161—15 **4 Claims**

Artificial wreaths comprising base units that are substantially semi-toroidally shaped and equipped to have decorations such as artificial boughs and figurines removably attached thereto.

ERRATUM

For Class 161—30 see:
Patent No. 3,590,908

3,591,443
FLEXIBLE CORE MATERIAL IN SKIN AND CORE LAMINATES
Edwin Dexter Cox, Scarsdale, N.Y., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Sept. 18, 1967, Ser. No. 668,624
Int. Cl. B32b *3/16*
U.S. Cl. 161—37 **2 Claims**



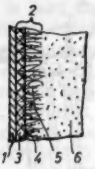
A flexible core for use primarily in making skin and core structures with curved surfaces, the core being composed of blocks of rigid closed-cell polyvinylchloride foam attached to a flexible backing sheet.

3,591,444

HEAVY-DUTY FOAM LAMINATES

Peter Hoppe, Troisdorf, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 26, 1968, Ser. No. 740,111
Claims priority, application Germany, July 4, 1967, F 52,850
Int. Cl. B32b *5/18*
U.S. Cl. 161—53 11 Claims



A reinforced foam plastic laminate having a special marginal zone reinforcing insert comprising a reinforcing mat and a layer of fibers which are intermeshed with said reinforcing mat to firmly join the marginal reinforcing mat to the foam core. The heavy-duty foam laminates have extremely high static and dynamic strength values and can be used in various forms in the building of vehicles, housing and furniture or the like.

3,591,445

LUMINESCENT EDGING FOR ARTICLES

Elliott A. Schonberg, East Orange, Charles B. Thomson, Morris Plains, and John Bacha, Clifton, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 2, 1969, Ser. No. 838,633
Int. Cl. B32b *3/04;* B44f *1/14*
U.S. Cl. 161—86 11 Claims

Thermoplastic films having incorporated therein an ultra-violet light sensitizer are disposed about and adhered to the edges of a fabric article, thereby forming a protective border about the edges of the article to prevent unraveling and facilitating quality control inspection.

3,591,446

SURFACES FOR PLAYING FIELDS

Hans-Georg Trieschmann, Hambach, Leo Unterstenhoefer, Limburgerhof, Siegfried Maier, Speyer, and Heinz Berbner, Weiher, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed June 3, 1969, Ser. No. 829,986
Claims priority, application Germany, June 7, 1968, P 17 59 787.4
Int. Cl. B32b *3/00*
U.S. Cl. 161—122 2 Claims

Special surfaces for playing fields comprising an upper layer (a_1) and a lower layer (a_2), each layer consisting of a thermoplastic molding material having a special composition. The layers (a_1) and (a_2) are webs or boards provided with parallel ribs on one side only, layer (a_1) being arranged on top of layer (a_2) in such a way that the ribbed sides are in contact, the ribs of one layer being at an angle of from 45° to 90° to those of the other layer.

3,591,447

LOW DENSITY CORK-ASBESTOS FELT AND PROCESS OF PRODUCING THE SAME

Daniel L. Juhl, Lancaster, Pa., assignor to Raybestos-Manhattan, Inc., Manheim, Pa.

No Drawing. Filed Jan. 31, 1967, Ser. No. 612,812
Int. Cl. B32b *19/08*
U.S. Cl. 161—155 17 Claims

A low density cork-filled asbestos felt composed of first and second webs of dry carded spinning grade asbestos fibers, between which there is an intermediate discontinuous layer of granulated cork particles which, prior to being combined with the webs of asbestos fibers, are coated with from 1 to 10 percent of a thermosetting resin. In the felt, fibers in the opposing surfaces of the first and the second webs extend through the interstices in the discontinuous layer of granulated cork particles and are entangled with fibers from the opposing web. The cork-filled asbestos felt contains from 20 to 50 percent, by weight, of a thermosetting resin. A process for preparing the cork-filled asbestos felt is also described.

3,591,448

WOOD WITH A DENSIFIED SURFACE LAYER AND METHOD OF MAKING SAME

Armin Elmendorf, Portola Valley, Calif. (860 Charleston Road, Palo Alto, Calif. 94303)

Filed Aug. 15, 1966, Ser. No. 572,502
Int. Cl. B27m *1/02;* B32b *5/14, 7/02*
U.S. Cl. 161—164 13 Claims

This invention relates to a method of densifying wood to provide a board composed of ligno-cellulosic fibers arranged in annular rings containing spring and summer wood, in which the summer wood is of substantially the same density in each ring from one surface of the board to the opposite surface and the spring wood is compacted in an outer surface zone of the board between the rings of the summer wood without case hardening the wood.

3,591,449

COKING AND OXIDIZING OF WASTE LIQUORS

Howard V. Hess, Glenham, and Edward L. Cole, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,078
The portion of the term of the patent subsequent to Apr. 21, 1987, has been disclaimed
Int. Cl. D21c *11/12*
U.S. Cl. 162—30 7 Claims

A process for treating aqueous organic waste liquor including the steps of coking the waste liquor, in the absence of free oxygen, thereby forming a coke-containing aqueous slurry, steam, gases, and an effluent, separating aqueous liquid from said slurry and combining said aqueous liquid with said effluent, and air-oxidizing the thus combined liquids to yield a hot effluent having a reduced chemical oxygen demand.

3,591,450

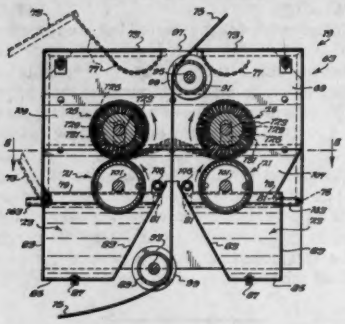
METHOD AND APPARATUS FOR CONDITIONING AND DEFIBRATING A WEB OF PAPER PULP PRIOR TO AIR LAYING

James A. Murphy, Toronto, Ontario, Canada, and Charles Allen Lee, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Aug. 30, 1967, Ser. No. 664,518
Int. Cl. B21b *1/02*
U.S. Cl. 162—265 5 Claims

In an apparatus for and a method of defibrating a web of wood pulp, the web is conditioned by a uniform spray of liquid impinging on the web in a uniform pattern and with a uniform density across the full width of the web. The spray may be a mixture of mineral oil and water and

may be generated by rotating a dip roller into a tank of the liquid to lift a film of liquid to a rotating brush roller. The rotational speed of the brush roller is held constant and the rotational speed of the dip roller is varied



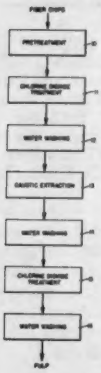
in accordance with the web travel speed to provide a uniform density of spray, preferably on both sides of the web. The liquid in the tanks may be held at a constant level by a controlled supply means.

3,591,451

PRETREATMENT OF VEGETABLE MATTER AND DELIGNIFICATION OF THE REFINED MATTER WITH CHLORINE DIOXIDE

Harry D. Wilder, Richmond, Va., assignor to Ethyl Corporation, New York, N.Y.

Filed Feb. 6, 1969, Ser. No. 797,209
Int. Cl. D21c
U.S. Cl. 162—67 22 Claims



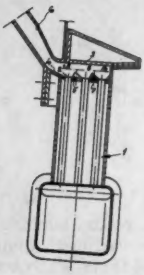
A process for the delignification of chips of vegetable matter by pretreating the chips to obtain at least 64 percent by weight refined vegetable matter, and delignifying the refined vegetable matter with chlorine dioxide. A pulp produced in high yield by the process which refines easier, dries more readily on a paper machine, exhibits higher on-machine filler retention, and possesses greater strength than conventionally bleached kraft pulp made from the same wood mixture. A paper produced from said pulp which has higher tensile, tear, burst, fold, pick and delamination strengths and greater brightness stability than paper produced from conventionally bleached kraft pulp made from the same wood mixture.

3,591,452

APPARATUS FOR FEEDING PAPER STOCK TO A PAPER MACHINE

Erik A. Nykopp, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Jan. 17, 1969, Ser. No. 791,937
Claims priority, application Finland, Mar. 26, 1968, 836/68
Int. Cl. D21f 1/06
U.S. Cl. 162—343 9 Claims



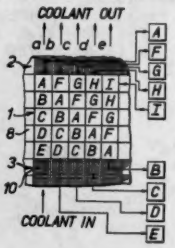
An apparatus for feeding paper stock to a paper machine in which even distribution of the pulp stock free from fiber accumulations is obtained across the entire width of the paper machine. The stock flows from distribution tubes into a chamber through a plurality of transverse inlet rows and impinges on the opposite wall of the chamber. The inlet wall is provided with humps which extend across the chamber, both parallel to and between each pair of inlet rows. The stock flows from the chamber through a discharge channel and to the head box of the paper machine.

3,591,453

METHOD OF OPERATING A GAS COOLED FAST BREEDER REACTOR

Charles Peter Gratton, Dorchester, Dorset, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 18, 1968, Ser. No. 713,601
Claims priority, application Great Britain, Apr. 4, 1967, 15,418/67
Int. Cl. G21g 1/00
U.S. Cl. 176—18 2 Claims



A method of operating a fast breeder reactor in which the coolant is passed serially through at least one part of the blanket and the core in series which method resides in causing the fissile fuel to move through the core in counterflow to the coolant flow direction and the fertile fuel in concurrent flow with the coolant flow direction.

3,591,454

PROCESS AND APPARATUS FOR THE CONTINUOUS FERMENTATION OF DRAFF-CONTAINING MASHES

Hans-Ulrich Laatsch, Berlin, Germany, assignor to Forschunginstitut fur die Gasungsindustrie Enzymologie und technische Mikrobiologie, Berlin, Germany

Filed May 22, 1968, Ser. No. 731,111
Int. Cl. C12b *1/00*
U.S. Cl. 195—15 11 Claims

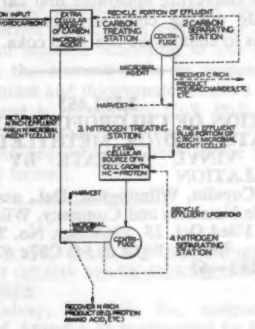
A process for the continuous fermentation of draff-containing mashes, consisting preferably of starch-containing raw products, is used for obtaining ethanol. In accordance with the process, mashes intended for fermentation and flowing in a continuous stream, are separated into two streams the amount of which have a ratio of of 1:10 to 1:12, whereupon the smaller stream is consecutively saccharified, sterilized, cooled, diluted, acidified, treated with feed salts, and enriched with yeast cells up to a concentration of 350 to 400 million cells/ml. Then the smaller stream is united with the larger stream and the two flow jointly through a fermentation battery and are jointly fermented. A suitable apparatus is used to carry out this process.

3,591,455

CONTINUOUS MICROBIAL PROCESS

Robert A. Oppermann, Oak Lawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Feb. 14, 1968, Ser. No. 705,550
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 10 Claims



The present invention broadly comprises a process for the utilization of a source of carbon and a separate source of nitrogen in a continuous system wherein by varying the choice of input carbon source and a selected initial batch of microbial agent, oxygenated or reduced hydrocarbon products are formed where the microbial agent is operated under non-proliferating conditions. The invention further contemplates the production of proteins and amino acids at the source of nitrogen where extra cellular nitrogen is provided under nitrogen-supplemental conditions, such as by an inorganic compound like ammonium sulfate. The system is continuous and carefully regulated so that even though carbohydrate product is desired from the source of carbon, a portion of the stream and the microbial particles are passed through the process to the source of nitrogen in a growth cycle before returning to the input source of carbon. After both primary treatment stations in the process centrifuges separate the microbial agent from the medium, the desired commercial product may be further separated and recovered from said stream where optionally the preceding treatment station is live, i.e. where C or N cells are harvested and optionally commercially products are produced. After each live separating station, the total microbial agent is split; a major portion is harvested and the remainder is passed along to the subsequent treating station of the opposite source (i.e., C or N). A portion of the effluent containing the medium is preferably recycled where the station is live and in a minority of cases a portion of the microbial agent may be recycled to provide inoculum.

3,591,456

PROCESS FOR PRODUCING L-TRYPTOPHAN

Katsunobu Tanaka, Machida-shi, and Keiichi Inuzuka, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed June 14, 1968, Ser. No. 736,987
Claims priority, application Japan, June 17, 1967, 42/38,468
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 11 Claims

A process for producing L-tryptophan by fermentation from anthranilic acid which comprises culturing a hydrocarbon-assimilating microorganism under aerobic conditions in an aqueous nutrient medium containing a hydrocarbon or a mixture of hydrocarbons as the main carbon source and precursor amounts of anthranilic acid. Typical microorganisms that can be employed in the process include *Brevibacterium ketoglutamicum, Candida tropicalis* and *Streptomyces antibioticus.*

3,591,457

ENZYMATIC DECOMPOSITION OF GLUCANS

Hans Bender, Freiburg im Breisgau, and Harald Metz, Darmstadt, Germany, assignors to E. Merck A.G., Darmstadt, Germany

No Drawing. Continuation of abandoned application Ser. No. 462,739, June 9, 1965. This application Sept. 13, 1968, Ser. No. 760,127
Claims priority, application Germany, June 11, 1964, M 61,327
Int. Cl. C12d *1/00*
U.S. Cl. 195—33 7 Claims

The decomposition of β-glucans, particularly native cellulose, by subjecting same to the activity of *Oxyporus populinus,* the culture filtrate thereof, a mycelium extract thereof, or an enzyme produced therefrom, thereby producing such decomposition products as glucose and cellobiose.

3,591,458

PROCESS FOR THE DETERMINATION OF NITROGEN-FIXING ACTIVITY

Ralph W. F. Hardy, Unionville, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 22, 1967, Ser. No. 692,650
Int. Cl. C12k *1/06*
U.S. Cl. 195—103.5 5 Claims

Described and claimed is a process for the qualitative or, preferably, quantitative determination of the nitrogen-fixing activity of living organisms by the measurement of their conversion of acetylene to ethylene as determined, for example, by chromatographic analysis.

3,591,459

METHOD OF ENZYME DETERMINATION

Reinhard Haschen and Wolfgang Farr, Halle (Saale), Dieter Reichelt, Bitterfeld, and Norbert Rehfeld, Halle (Saale), Germany, assignors to VEB Arzneimittelwerk Dresden, Radebeul, Germany

No Drawing. Filed Jan. 4, 1968, Ser. No. 695,585
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 3 Claims

A method of testing a substance, for example, blood serum, to quantitatively determine the presence of amino acid arylamidase catalytic activity, in which the substance

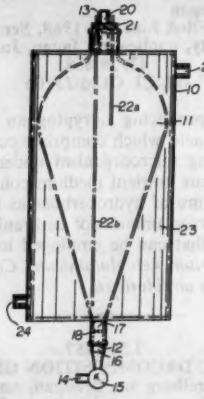
is mixed with a substituted alanine derivative whereby any amino acid arylamidase catalytic activity present splits the substituted alanine derivative to form a substituent which can directly be colorimetrically determined or which can be converted to another substance which, in turn, can be colorimetrically determined.

3,591,460

APPARATUS AND MEANS FOR HANDLING CELLS

David F. Smith, 11810 E. 13 Mile Road, Warren, Mich. 48093

Filed Aug. 30, 1967, Ser. No. 664,322
Int. Cl. C12b *1/10*; C12k *1/10*
U.S. Cl. 195—127 4 Claims



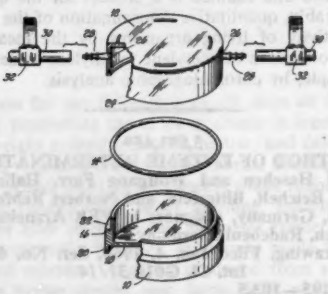
A funnel-shaped chamber apparatus is provided for passage therethrough of upwardly flowing fluid medium adapted for the maintenance and/or growth of living cells in suspension. In use, the medium and the cells are introduced into the chamber and fresh medium is put in at a continuous rate at least sufficient to keep the cells suspended. The living cell population distributes according to size vertically in the chamber (or series of successively larger chambers) and thus can be fractionated for size. Also, bacteria, viruses and other microbiological entities as desired can be continuously cultivated on the living cells for harvesting either intermittently or continuously.

3,591,461

MICRO-ORGANISM CULTURING PLATE

Stephen L. Bazil, 25 Catalpa Lane, Valley Stream, N.Y. 11581, and David B. Land, 57—05 Horace Harding Expressway, Flushing, N.Y. 11368

Filed Aug. 8, 1969, Ser. No. 848,433
Int. Cl. C12b *1/04*
U.S. Cl. 195—142 3 Claims



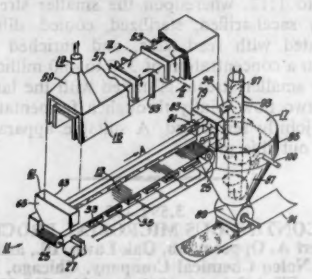
An improved micro-organism culturing petri-type plate including a specimen dish and a tightly fitting cover that forms a gas-tight seal with the specimen dish, the cover providing a gas space above the dish and having two opposed fittings for gas tubings with gas flow cut-offs, one of the tubings serving as a coupling to a supply of a specific gas.

3,591,462

METHOD AND APPARATUS FOR THE CONTINUOUS CARBONIZATION OF COAL

George M. Bretz, Verona, Pa., assignor to Koppers Company, Inc.

Filed Dec. 12, 1968, Ser. No. 783,199
Int. Cl. C10b *7/06, 5/06*
U.S. Cl. 201—15 9 Claims



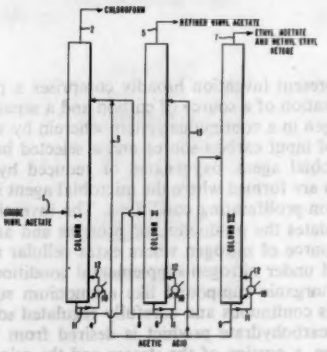
A continuous coal carbonization system includes automated belt conveying apparatus that carries coal through an elongate coking chamber wherein the temperature varies so as to change the coal into coke.

3,591,463

SEPARATION OF CHLOROFORM AND/OR ETHYL ACETATE AND/OR METHYLETHYL KETONE FROM VINYL ACETATE BY EXTRACTIVE DISTILLATION

Harry B. Copelin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

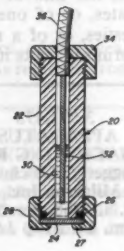
Filed Oct. 25, 1968, Ser. No. 770,481
Int. Cl. B01d *3/34*; C07c *67/06*
U.S. Cl. 203—61 8 Claims



An extractive distillation method of separating chloroform, and/or ethyl acetate and/or methylethyl ketone from vinyl acetate, particularly when such materials are present as impurities in vinyl acetate. The method involves using a 2–10 carbon saturated aliphatic carboxylic

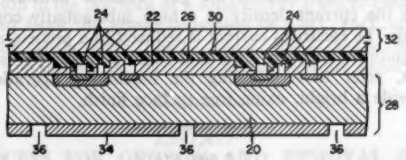
acid as the extraction solvent. Acetic acid is an effective solvent for separating any or all three of such materials, while the other acids of the above type are effective solvents for separating ethyl acetate and/or methylethyl ketone.

3,591,464
METHOD AND APPARATUS FOR DETECTING IONIC ACTIVITY
Martin S. Frant and James W. Ross, Newton, Mass., assignors to Orion Research, Inc., Cambridge, Mass.
Filed Sept. 6, 1968, Ser. No. 757,848
Int. Cl. G01n *27/46*
U.S. Cl. 204—1T **40 Claims**



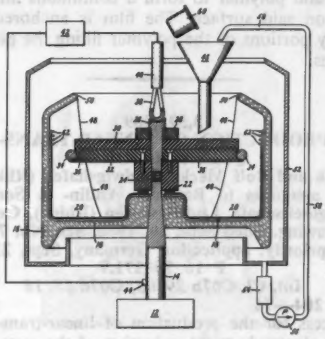
A potentiometric, solid state membrane type electrode for detecting ion activities in solution and in which electrode the ion-sensitive element is an imporous solid membrane having a surface intended to contact the solution. The surface comprises an intimate mixture of Ag_2S and another compound selected according to the nature of the ion to which the element is to be responsive. For copper, lead, cadmium and thiocyanate sensitive elements, the latter compound is respectively CuS, PbS, CdS and AgSCN. One form of the membrane is a compressed coprecipitate of the requisite salts free of the metals of which the salts are formed.

3,591,465
SELECTIVE SILICON GROOVE ETCHING USING A TANTALUM OXIDE MASK FORMED AT ROOM TEMPERATURES
Andrew F. McKelvey, Lansdale, Pa., assignor to the United States of America as represented by the Secretary of the Navy
Filed Sept. 15, 1969, Ser. No. 857,991
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **6 Claims**



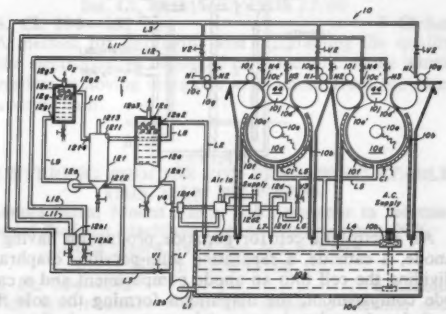
In silicon groove etching, the improved method of applying a tantalum coating to a silicon base material, masking the tantalum coating with photoresist materials, chemically removing the exposed portion of tantalum, stripping the photoresist and anodizing the remaining tantalum to form an oxide, thus providing an inert tantalum oxide mask in the subsequent etching of the silicon base material.

3,591,466
COMPOSITE STRUCTURE PRODUCTION
Samuel Heiman, Philadelphia, Pa., assignor to General Electric Company
Filed Mar. 8, 1968, Ser. No. 711,717
Int. Cl. C23b *7/02, 7/00;* B23p *11/00*
U.S. Cl. 204—16 **1 Claim**



Electrodeposition is conducted in rotating cell having rotating deposition electrode. Material to be included (e.g. inorganic fibers) in the electrodeposit is added to the bath, and is held by centrifugal force against workpiece while deposition continues further, firmly investing inclusion in deposit.

3,591,467
APPARATUS FOR AND METHOD OF PROTECTING A SHEET BEING ELECTROPLATED WITH A METAL
Daniel T. Carter, Penn Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Filed May 9, 1969, Ser. No. 823,377
Int. Cl. C23b *5/58;* B01k *3/00*
U.S. Cl. 204—28 **24 Claims**



This invention relates to electroplating and more particularly to an apparatus for and a method of protecting one surface of a moving sheet being electroplated with a metal on a rotary type plating apparatus.

3,591,468
METHOD OF COATING METAL SURFACES WITH A FLUORINE-CONTAINING POLYMER
Kazuyo Nishio and Osamu Geshi, Osaka, and Junichi Sako, Kobe, Japan, assignors to Daikin Kogyo Co., Ltd., and Toho Kasei Co., Ltd., both of Osaka, Japan
Filed May 3, 1968, Ser. No. 726,350
Int. Cl. C23f *17/00*
U.S. Cl. 204—35R **2 Claims**

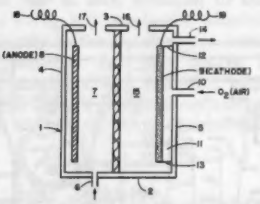
A method of coating a metal surface with a fluorine-containing polymer, comprising forming a chromium plating layer on a flat or roughened metal surface under

various conditions, i.e. at an optimum electric current density or an electric current density higher than said optimum electric current density, electrolytically etching the surface of said chromium plating layer by reversing the polarities of electrodes to produce a number of pits, cracks or crevices therein, coating the resultant surface with dispersion of the fluorine-containing polymer and sintering said polymer to form a continuous film of said polymer on said surface. The film is anchored to said surface by portions of the polymer filling the pits, cracks or crevices.

3,591,469
PRODUCTION OF LINEAR-TRANS-QUINACRIDONES
Fritz Beck and Rolf Mecke, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Sept. 20, 1968, Ser. No. 761,349
Claims priority, application Germany, Sept. 21, 1967, P 16 70 271.9
Int. Cl. C07b *29/06*; C07d *37/18*
U.S. Cl. 204—74 **5 Claims**

A process for the production of linear-trans-quinacridones by electrochemical reduction of the corresponding quinacridonequinones in a cell.

3,591,470
METHOD FOR THE PRODUCTION OF PEROXIDE
Donald H. Grangaard, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Original application Jan. 30, 1967, Ser. No. 612,514, now Patent No. 3,507,769, dated Apr. 21, 1970. Divided and this application Dec. 5, 1969, Ser. No. 882,480
Int. Cl. B01k *3/00*; C01b *15/00*
U.S. Cl. 204—84 **3 Claims**



An electrolytic cell for peroxide production having an anode, a cathode, a separating semi-pervious diaphragm dividing the cell into an anode compartment and a cathode compartment, the diaphragm forming the sole flow path for electrolyte between inlet port means in the anode compartment and outlet port means in the cathode compartment. A process of electrolytic cell operation in the production of alkaline peroxide solutions by the electrochemical reduction of oxygen to prehydroxyl ions where the diaphragm of the cell serves as a control for the electrolyte flow.

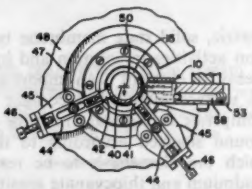
3,591,471
PREPARATION OF NITROSODISULFONATE
Pius Anton Wehrli, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed July 14, 1969, Ser. No. 841,614
Int. Cl. C01b *21/54, 21/10*
U.S. Cl. 204—91 **11 Claims**

Preparation of nitrosodisulfonate by electrolysis of an aqueous solution of hydroxylamine disulfonate.

3,591,472
METHOD OF TREATMENT OF SURFACES, ESPECIALLY METALLIC, AND THE PARTS TREATED BY THIS METHOD
Claude Jacques Amsallem, 10 Rue du Portail Rouge, 42 Saint Etienne, France
No Drawing. Filed Aug. 1, 1968, Ser. No. 749,318
Claims priority, application France, Aug. 7, 1967, 117,007
Int. Cl. C23b *1/00*
U.S. Cl. 204—140 **6 Claims**

A method of treatment of surfaces, especially metallic surfaces, which is intended to improve their qualities of resistance to friction and wear, said method consisting of subjecting the surface to electrolysis in an aqueous solution of a salt or a mixture of salts, such as the thio or seleno-molybdates, the thio or seleno-tungstates, the thio or seleno niobiates, or of one or more compounds having similar properties, or of a mixture of basic compounds adapted to form said salts in situ.

3,591,473
METHOD AND APPARATUS FOR ELECTROCHEMICALLY MACHINING ROTATING PARTS
William Andrew Haggerty, Cincinnati, Ohio, assignor to The Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Apr. 8, 1968, Ser. No. 719,451
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 **11 Claims**



A method and apparatus for electrochemically machining workpieces to form surfaces of revolution to precise shapes and dimensions includes means rotating the workpiece on a pair of shoes engaging the surface of the workpiece being machined. An electrochemical machining tool is positioned so that its essentially flat frontal surface is normal to a line from said tool to the center of the workpiece when the workpiece has been machined to its desired dimension. A high velocity flow of electrolyte is forced between the tool and the workpiece and a high density flow of electrical current, approximately 6000 amperes per square inch, removes material anodically from the workpiece as it rotates past the tool to provide a smooth surface finish. The rate at which the tool is fed toward the workpiece establishes a steady state condition thereby keeping the gap distance constant, and thus the current density at a high substantially constant level. The electrical current is reduced to a predetermined magnitude, between 1500 and 3000 amperes per square inch, prior to terminating the machining operation to provide a bright, oxide free surface finish.

3,591,474
METHOD OF MAKING SUPERCONDUCTING CYLINDERS FOR FLUX DETECTORS
John M. Goodkind, Del Mar, and David L. Stolfa, La Jolla, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed July 14, 1969, Ser. No. 841,347
Int. Cl. B23p *1/00*; C23b *1/00*
U.S. Cl. 204—143R **8 Claims**

A method of making superconducting cylinders of the "weak link" type is provided. The method allows the

weak link to be made much smaller than was heretofore possible, thereby greatly increasing sensitivity and operating temperature range when the cylinder is used in a flux

detector. The resistance of the weak link is monitored continuously as metal is removed from the link by electrochemical action.

3,591,475
PREPARATION OF UNSYMMETRICAL THIOL-ALLENE DIADDUCTS

Karl Griesbaum, Forchheim, Germany, and Alexis A. Oswald, Mountainside, and Daniel Noyes Hall, Linden, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 368,351, May 18, 1964, now Patent No. 3,340,332. This application Dec. 9, 1968, Ser. No. 782,466
Int. Cl. B01j *1/10;* **C07c** *149/06, 149/26*
U.S. Cl. 204—158R **19 Claims**

Unsymmetrical thiol-allene diadducts [1,3- and 1,2-bis (substituted mercapto)-propanes] are prepared by the free radical and/or ionic addition of a thiol compound to a monoadduct allyl sulfide or through the sequential addition of two different thiol compounds to allene. Diadducts containing a dialkyl dithiophosphoric acid constituent and either an alkyl or aryl thiol constituent are effective agricultural chemicals.

3,591,476
MANUFACTURE OF ALIPHATIC ALDEHYDES BY RADIOLYSIS

Hendrik Adriaan Jacobus Battaerd, North Clayton, Victoria, Australia, assignor to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed Dec. 1, 1967, Ser. No. 687,241
Claims priority, application Australia, Dec. 12, 1966, 15,155; Dec. 21, 1966, 15,644
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 **8 Claims**

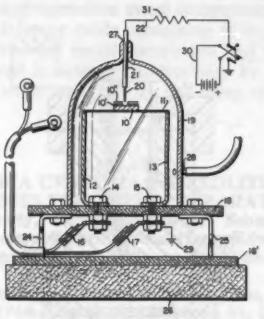
A process of converting alcohols into aldehydes which comprises irradiating alcohol with a source of high energy radiation in the presence of a solid energy transfer catalyst selected from the group consisting of CdO, ZnO, alpha alumina Al_2O_3, PbO, Pb_3O_4, Sb_2O_3, Bi_2O_3, V_2O_5, WO_3, MoO and copper, surface-oxidized to cuprous oxide.

3,591,477
PROCESS FOR GROWTH AND REMOVAL OF PASSIVATING FILMS IN SEMICONDUCTORS

Daniel I. Pomerantz, Lexington, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of application Ser. No. 419,972, Dec. 21, 1964. This application July 17, 1968, Ser. No. 745,435
Int. Cl. B01k *1/00*
U.S. Cl. 204—164 **28 Claims**

An insulative passivating film is grown on the surface of a semiconductor slice by heating the slice in a controlled atmosphere in the presence of an electrical discharge between the slice and an electrode. The electrode, supplied with power by a constant-current source, is made cathodic with respect to the slice. Thickness of the film is varied by controlling, among other variables, the current from the source and the time of the discharge. A previously formed passivating film is removed from a



semiconductor slice by reversing the polarity of the electrode. Growth or removal of the passivating film may be limited to predetermined areas by the shape or movement of the electrode, or by placing an apertured mask between the electrode and the slice. The foregoing steps may be combined with diffusion and metallization techniques to produce a semiconductor device.

3,591,478
ELECTROCOATING PROCESS

James R. Erickson, Parma, Ohio, assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed May 6, 1968, Ser. No. 727,009
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **7 Claims**

A method for improving and maintaining the quality of the electrocoating deposited on a metallic anode which comprises removing inorganic acid anions from the electrocoating bath.

3,591,479
SPUTTERING PROCESS FOR PREPARING STABLE THIN FILM RESISTORS

Emanuel Stern, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1969, Ser. No. 823,063
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **6 Claims**

Thin film resistors which are stable to thermal and electrical stress are prepared. A metal alloy is deposited onto a substrate in a sputtering atmosphere comprised of a pre-determined mixture of argon and oxygen. A DC bias potential in a range of −70 to −250 volts is applied to the substrate during the sputtering operation.

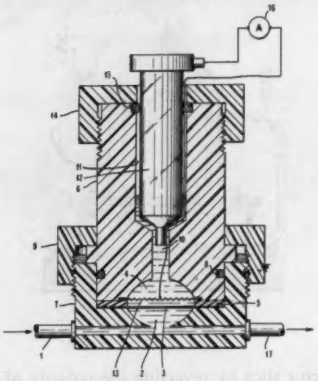
3,591,480
GLUCOSE MEASURING SYSTEM

Gordon W. Neff, Mahopac, Carlos J. Sambucetti, Mohegan Lake, and John E. Iomko, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1968, Ser. No. 745,007
Int. Cl. G01n *27/32, 27/40, 27/42*
U.S. Cl. 204—195 **9 Claims**

A measuring system is provided which directly measures the concentration of glucose in biological fluids. Glu-

cose from a biological fluid is diffused through a semipermeable membrane into a reaction chamber and is catalyzed by the enzyme glucose oxidase whereupon gluconic acid and hydrogen peroxide are formed. Iodide ions in the reaction chamber then effect the decomposition of the hydrogen peroxide to form iodine and water.



Then a platinum and calomel electrode, coupled via an electrolyte solution, act to cause galvanic coulometric reduction of the iodine to regenerate iodide. At steady state the only current-regulating mechanism is the diffusion of glucose across the membrane, which is a linear function of concentration.

3,591,481
CONCENTRATION MEASURING SYSTEM
John H. Riseman, Cambridge, Mass., assignor to Orion Research Incorporated, Cambridge, Mass.
Filed Nov. 12, 1968, Ser. No. 774,953
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **7 Claims**

A system for measuring the concentration of species of ions in a sample solution with a potentiometric electrode having a Nernstian response. The electrode and a reference electrode are connected to a meter which can be nulled at a central indicium on the meter scale. The meter scale is divided to one side of the null indicium into increments over a range from a first minimum value to infinity at the null point according to the function

$$\log\left(\frac{C+Q}{C}\right)$$

where C is the concentration of the species in the sample solution and Q is the fixed molarity of the species of ion of interest in a standard solution. The scale is divided to the other side of the null indicium in a similar manner but according to the function

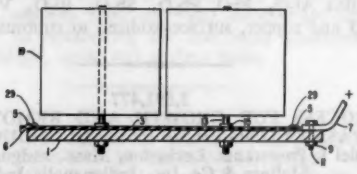
$$\log\left(\frac{C}{C-Q}\right)$$

Insertion of the electrodes into the sample solution provides a response which is nulled at the meter. The addition of the standard solution creates a new potential which when read on the appropriate scale, indicates the concentration of the species of ion to which the potentiometric electrode is responsive.

3,591,482
SILVER-SILVER CHLORIDE ELECTRODE AND METHOD OF MAKING SAME
Gordon W. Neff, Mahopac, and Carlos J. Sambucetti, Mohegan Lake, N.Y., and John E. Tomko, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,608
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 **16 Claims**

The silver chloride layer of a silver-silver chloride electrode is coated with a thin protective layer of methacrylate. The layer of methacrylate acts to prevent corrosion of the silver chloride layer and yet allows same to retain its ion sensitivity.

3,591,483
DIAPHRAGM-TYPE ELECTROLYTIC CELLS
Richard E. Loftfield, Chardon, and Henry W. Laub, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Sept. 27, 1968, Ser. No. 763,121
Int. Cl. C22d *1/02*
U.S. Cl. 204—252 **5 Claims**



A diaphragm-type electrolytic cell is provided which is especially suited to the use of dimensionally stable anodes. The cell is characterized in having a metal base which serves as a rigid support for the anodes, as a conductor for distributing current to the anodes and as a rigid support for the cell can. Furthermore a sheet of

electrically non-conductive material covers the entire cell base and serves to insulate the contact between the cell can and the cell base and also provides a hydraulic seal to prevent leakage of electrolyte.

3,591,484

COKE SUPPRESSING ADDITIVE

Reese A. Peck and Raymond F. Wilson, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,566
Int. Cl. C10g *9/16, 13/00, 27/00*
U.S. Cl. 208—48AA 9 Claims

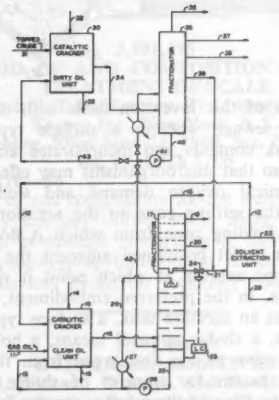
A coke suppressing additive prepared by contacting an oxidized heavy hydrocarbon fraction with an aromatic polycarboxylic acid and/or anhydride producing compound in the presence of an oxidant followed by treatment with hydrogen. The additive is particularly useful for suppressing coke formation in a hydrocracking process.

3,591,485

COMBINATION CATALYTIC CRACKING PROCESS

Robert C. Mason, Jr., Borger, Tex., assignor to Phillips Petroleum Company

Filed Sept. 10, 1969, Ser. No. 856,779
Int. Cl. C10g *11/00*
U.S. Cl. 208—78 4 Claims



In a system wherein a dirty oil fluid catalytic cracking system and a clean oil catalytic cracking system are operated, the slurry oil from the dirty oil unit is, at least in part, charged to the fractionator for the clean oil unit to dilute the catalyst loading of the clean oil unit's slurry, which minimizes erosion of the slurry pumps, increases heavy cycle oil production, and decreases gas and coke production.

3,591,486

HYDROCRACKING PROCESS

Reese A. Peck and Raymond F. Wilson, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,561
Int. Cl. C07c *27/10;* C10g *13/00*
U.S. Cl. 208—85 10 Claims

A hydrocracking process for increasing the yield of lower boiling hydrocarbons from heavy hydrocarbon fractions by oxidizing the heavy hydrocarbon and contacting said oxidized heavy hydrocarbon fraction with hydrogen in the presence of an aromatic polycarboxylic acid or anhydride producing compound.

3,591,487

HYDROCRACKING PROCESS IMPROVEMENT BY HIGH TEMPERATURE SULFIDING AND DRY GAS PROCESSING

Hans U. Schutt, Lafayette, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,374
Int. Cl. C01g *13/02*
U.S. Cl. 208—110 11 Claims

Hydrocracking catalysts which have been prepared by incorporating hydrogenation metal components into a hydrogel of a refractory oxide containing at least one Iron Group hydrogenation metal component and fluoride are greatly improved in activity and stability by sulfiding at a temperature of at least 750° F. and using relatively dry process gas.

3,591,488

HIGH SILICA CRYSTALLINE ZEOLITES AND PROCESSES FOR THEIR PREPARATION

Paul Earl Eberly, Jr., Baton Rouge, Sebastian Marc Laurent, Greenwell Springs, and Harry Edwin Robson, Baton Rouge, La., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 552,911, May 25, 1966. This application June 11, 1969, Ser. No. 832,109
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 20 Claims

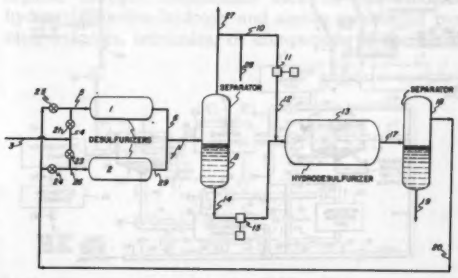
Crystalline aluminosilicate zeolites having silica to alumina mole ratios substantially higher than prior art zeolites are prepared by a process wherein a conventional crystalline aluminosilicate zeolite is contacted with water at an elevated temperature and then treated to remove alumina from the crystal lattice. The water treatment can be accomplished by contacting the crystalline aluminosilicate zeolite with a gas containing at least 2% water at a temperature between 800 and 1500° F. Higher concentrations of water are preferred, and, in accordance with the disclosure, pure steam may be used. In a preferred embodiment, the water treatment is accomplished in two steps; viz, by first treating the crystalline zeolite with a gas containing at least 2% water, followed by treatment with pure steam. Following the water treatment, amorphous alumina may be removed from the zeolite material by contacting with a dilute mineral acid or an organic acid chelating agent.

3,591,489

TWO-STAGE DESULFURIZATION UTILIZING HYDROGEN IN THE SECOND STAGE REACTION

Clark E. Adams and Charles N. Kimberlin, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Jan. 24, 1969, Ser. No. 793,784
Int. Cl. C10g *23/02*
U.S. Cl. 208—211 3 Claims



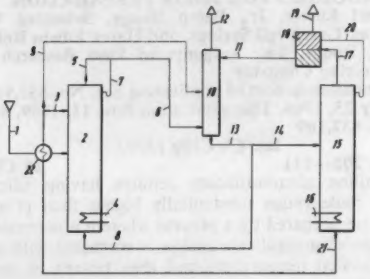
Petroleum fractions boiling above 200° F. are desulfurized in two stages in the presence of a sulfur-resistant

catalyst, the first stage being carried out in the absence of hydrogen and the second in the presence of hydrogen. The catalyst deactivates rapidly in the first stage and is regenerated by stripping with hydrogen or mixtures of hydrogen and hydrogen sulfide.

3,591,490
PROCESS OF SEPARATING PURE AROMATIC HYDROCARBONS FROM HYDROCARBON MIXTURES

Eckart Müller, Bergen Enkheim, and Kamar Percy John, Bad Homburg, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 14, 1969, Ser. No. 876,885
Claims priority, application Germany, Nov. 14, 1968, P 18 08 758.6
Int. Cl. B01d *3/40*; C10g *21/28*
U.S. Cl. 208—313 **8 Claims**

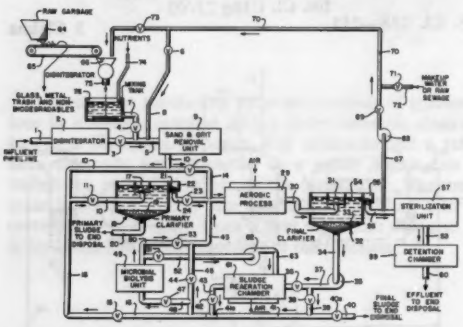


In the recovery of aromatic hydrocarbons from mixtures containing same by extractive distillation utilizing a selective solvent, a purer product in a greater yield can be achieved by passing a portion of the main solvent stream used in the distillation column directly to a countercurrent extraction unit for contact with the raffinate from the distillation column passing in countercurrent flow with water to produce a product mixture from which, after subsequent stripping in a stripping column, aromatic hydrocarbons can be recovered which would have otherwise been lost.

3,591,491
METHOD FOR THE TREATMENT OF AQUEOUS WASTES

Edmund G. Smith, 206 Watchung Ave., Upper Montclair, N.J. 07043, and John W. Hood, 43 John St., Ridgewood, N.J. 07450

Filed Oct. 4, 1968, Ser. No. 765,243
Int. Cl. C02c *1/06*
U.S. Cl. 210—6 **12 Claims**

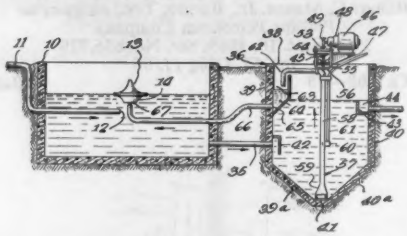


The method of treating sewage or other biodegradable waste materials in a system including an aerobic process wherein a settleable sludge is formed which comprises returning a part or all of the sludge to a point in advance of the input of the aerobic process and subjecting a selected portion of the returned sludge to the action of ultra violet or other bacteriocidal rays for the biolysis of the bacteria in said portion, the portion being selected to meet the food requirements of the active aerobic bacteria in the aerobic process. The portion subjected to biolysis is so regulated that substantially all of the biodegradable matter is consumed and only a relatively small quantity of sludge is removed to end disposal.

3,591,492
SEWAGE TREATMENT PROCESS AND APPARATUS

Peter J. Neuspiel, Chicago, Ill., assignor to FMC Corporation

Continuation-in-part of application Ser. No. 779,721, Nov. 29, 1968. This application May 8, 1970, Ser. No. 35,613
Int. Cl. B01d *21/04*; C02c *1/10*
U.S. Cl. 210—7 **16 Claims**



The process of this invention deals with the aerobic treatment of sewage wherein a surface type aerator mixes the tank contents and incorporates air into the mixed liquor so that microorganisms may effectively remove biochemical oxygen demand and sludge is returned from the settling zone to the aeration zone by delivery to a holding zone from which it flows, as by gravity, to an outlet positioned adjacent the intake of the surface type aerator at which point it mixes with influent sewage. In the preferred embodiment, the apparatus comprises an aeration tank, a surface type aerator, a settling tank, a sludge removal means, a holding tank adapted to receive sludge discharged from the settling tank, conduit means for transfer of sludge from the holding tank to the vicinity of the aerator intake, said holding tank being elevationally positioned so that flow of sludge through the conduit means is at least in part a gravity flow.

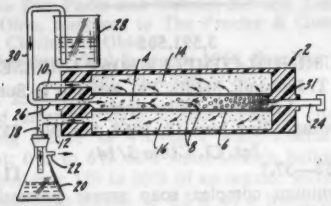
3,591,493
METHOD FOR THE TREATMENT OF BIOLOGICAL FLUIDS AND APPARATUS THEREFOR

Rashid A. Zeineh, 5742 W. Dakin St., Chicago, Ill. 60634

Filed June 17, 1968, Ser. No. 737,751
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 **17 Claims**

A method and apparatus for the treatment of biological fluids including primarily the separation and microconcentration of macromolecular structure substances from fluids in which they occur by the utilization of a semipermeable membrane which only permits the flow of smaller molecular structure substances therethrough while retaining the larger molecules for eventual recovery. Preferably, a biological fluid such as urine is introduced into a serpentine-type fluid pathway formed by a porous membrane such as cellophane and because of a pressure differential on either side of the pathway, the components of the biological fluid of smaller molecular structure pass

through the membranes to a collector. The remaining material such as protein of macromolecular structure is



carried through the serpentine path to its terminus where it may be readily recovered.

3,591,494

METHOD OF REMOVING HYDROCARBONS FROM THE SURFACE OF AN AQUEOUS BODY

Willie W. Crouch and Clifford W. Childers, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 30, 1969, Ser. No. 795,340
Int. Cl. E02b *15/04*
U.S. Cl. 210—40 **8 Claims**

Hydrocarbons floating on an aqueous body are removed by contacting them with a fine powder which is a mixture of a polymer compatible with hydrocarbons and a water insoluble inorganic filler, whereby the powder absorbs the hydrocarbons and thereafter sinks to the bottom of the aqueous body.

3,591,495

METHOD OF AND COMPOSITION FOR THE TREATMENT OF SCALE

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 24, 1968, Ser. No. 739,205
Int. Cl. C02b *5/06*
U.S. Cl. 210—58 **6 Claims**

Method of and composition for the treatment of scale, particularly calcium sulfate scale, using a quaternary ammonium compound comprising a trialkyl-omega-hydroxypolypropoxypropylammonium halide, nitrate, sulfate, acetate and hydroxide including mixtures.

3,591,496

OVERBASED ADDITIVES

Michael A. Vickars, Wantage, and David A. Edwards, Oxford, England, assignors to Esso Research and Engineering Company

No Drawing. Filed July 8, 1968, Ser. No. 743,057
Claims priority, application Great Britain, July 12, 1967, 32,123/67
Int. Cl. C10m *1/48, 1/40, 1/24*
U.S. Cl. 252—18 **6 Claims**

A process comprising preparing a complex by reacting H_2S with an alkoxide of a polyvalent metal, which complex may be dispersed in oil in the presence of a dispersant, followed by heating to decompose said complex and form a dispersion of metal salt in said oil. The resulting metal salt dispersion is useful as a lubricating oil detergent.

3,591,497

DEMULSIFICATION OF HYDRAULIC OILS USING GROUP II METAL SULFONATES AND HYDROXYLIC COMBINATIONS

James H. Walker, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,334
Int. Cl. C10m *1/48*
U.S. Cl. 252—32.7 **7 Claims**

Emulsibility of oils having material contact with water, e.g., hydraulic oils, is significantly reduced by the addition of alkanols or diols in combination with a Group II metal sulfonate.

3,591,498

SULFONATION OF NEUTRAL OIL-BENZENE ALKYLATE BLEND

Lemuel S. Benbury, Whittier, and Ulric B. Bray, Pasadena, Calif., assignors to Bray Oil Company

No Drawing. Filed May 6, 1968, Ser. No. 727,022
Int. Cl. C10m *1/40*
U.S. Cl. 252—33 **5 Claims**

A blend of petroleum lubricating oil of 400–600 molecular weight and linear alkyl benzene of about 25–35 carbon atoms is sulfonated with oleum. The reaction mixture is immediately diluted with about two volumes of non-aromatic naphtha without hydrolyzing the sludge which is separated and discarded. The naphtha solution is extracted with 8–15% by volume of water, then neutralized with 50 to 100% excess fine hydrated lime and filtered. Calcium sulfate is adsorbed in the excess lime. Naphtha is recovered by distillation.

The residue oil-sulfonate solution containing about 40% sulfonate, is a clear, bright oil soluble sulfonate substantially free of sulfates and chlorides. It is useful as a detergent additive in motor oils and anti-rust compounds.

3,591,499

LUBRICATING GREASE CONTAINING METAL SALT OF ALPHA-OMEGA-DICARBOXYLIC ACIDS HAVING MOLECULAR WEIGHTS OF ABOUT 500 TO 2500

Arnold J. Morway, Clark, N.J., Jeffrey H. Bartlett, Arlington, Va., and George R. Hanington, Baytown, Tex., assignors to Esso Research and Engineering Company

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,937
Int. Cl. C10m *3/18*
U.S. Cl. 252—39 **8 Claims**

Metal salts of branched chain alpha-omega-dicarboxylic acids having molecular weights of about 500 to 2500 are useful in lubricants, particularly greases.

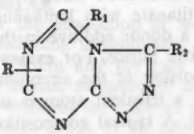
3,591,500

FUNCTIONAL FLUID COMPOSITIONS

James D. Sullivan, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 540,488, Apr. 6, 1966. This application Feb. 5, 1969, Ser. No. 796,885
Int. Cl. C10m *1/32, 1/42*
U.S. Cl. 252—47.5 **8 Claims**

Functional fluid compositions comprising a base fluid such as polyphenyl ethers, polyphenyl thioethers, mixed polyphenyloxy thioethers, synthetic esters, alkyl thiophenes, and dihalogenated diphenyl ethers and certain organic nitrogen compounds such as aminoindazoles, hydroxyindazoles, hydroxy and amino substituted pyrazoles, triazoles, tetrazoles, or compounds of the formula



having improved metal compatibility. These compositions are particularly useful as aircraft engine lubricants in hydraulic fluids.

3,591,501

LUBRICANT CONTAINING A HYDROXY-SUBSTITUTED PHOSPHINE OXIDE

William F. Olszewski, Cherry Hill, N.J., and Herbert Myers, Plymouth Meeting, Pa., assignor to Mobil Oil Corporation

No Drawing. Filed Jan. 24, 1969, Ser. No. 793,879
Int. Cl. C10m *1/44*
U.S. Cl. 252—49.8 8 Claims

The invention provides lubricant compositions comprising an organic fluid of lubricating viscosity and a hydroxy-substituted organophosphine oxide. The composition has improved load carrying properties.

3,591,502

COPOLYMERS CONTAINING ETHYLENE AND UNSATURATED KETONES ARE WAX CRYSTAL MODIFIERS FOR MINERAL OIL

Stephan Ilnyckyj, Islington, Ontario, and Syed S. H. Gilani, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Filed July 15, 1968, Ser. No. 744,667
Int. Cl. C10m *1/28*
U.S. Cl. 252—52R 4 Claims

Copolymers of ethylene and of ethylenically unsaturated ketone, having number average molecular weights of 1,000 to 50,000, are useful as wax crystal modifiers for distillate hydrocarbon fuel oils where they can be used to depress the pour point and improve flow and can also be used as dewaxing aids in preparing light distillate lubricating oils.

3,591,503

ELECTROSTATOGRAPHIC DEVELOPER

Robert J. Hagenbach and Myron J. Lenhard, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Apr. 17, 1967, Ser. No. 631,192
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 4 Claims

A xerographic carrier bead material for use in developing electrostatic latent images comprising a glass composition of from about 10 to about 40 parts oxides of silicon, from about 5 to about 50 parts oxides of barium, and oxides of metals selected from the group consisting of titanium, lead and mixtures thereof, all parts being based on a total of 100 parts by weight of the glass composition.

3,591,504

FERROELECTRIC COMPOSITION

Bernard Jaffe, South Euclid, Ohio, assignor to Clevite Corporation

Filed Dec. 18, 1967, Ser. No. 691,510
Int. Cl. C04b *35/46, 35/48;* G11b *9/02*
U.S. Cl. 252—62.9 4 Claims

An improved solid state switch or multi-state memory is composed of an electroded block of a solid solution of lead zirconate titanate with lanthanum ferrite, with the substitution of a donor additive in the A or B position of the perovskite lattice. For example, antimony is substituted for a portion of the zirconium or a portion of the titanium, or a trivalent atom is substituted for a portion of the lead. A typical composition is:

$$[Pb_{.99}Sb_{.02}(Zr_{.66}Ti_{.34})_{.98}O_3]_{0.9}(LaFeO_3)_{0.1}$$

The improved composition gives more favorable switching characteristics both with respect to speed and the number of times satisfactory switching is obtained and little or no degradation takes place.

3,591,505

ALUMINUM COMPLEX SOAP GREASES

Arthur T. Polishuk, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed June 18, 1968, Ser. No. 737,823
Int. Cl. C10m *5/14*
U.S. Cl. 252—37.7 11 Claims

An aluminum complex soap grease possessing improved stability is obtained by reacting an aluminum alkoxide sequentially with two different carboxylic acids in the presence of an oil base, wherein the first acid is relatively less reactive than the second. As compared with similar aluminum complex soap greases, this resulting grease shows superior physical properties, particularly in certain roll tests and wheel bearing performance tests, as well as possessing a higher melting point.

3,591,506

FUNCTIONAL FLUIDS CONTAINING HALOCARBONS FOR PREVENTING CAVITATION DAMAGE

Robert L. Peeler, Albany, Douglas Godfrey, San Rafael, and Neal W. Furby, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 4, 1968, Ser. No. 695,553
Int. Cl. C09k *3/00;* C10m *1/46;* C28f *11/10*
U.S. Cl. 252—78 11 Claims

Functional fluid containing a cavitation-damage inhibiting additive which is a halocarbon containing from 1 to 6 carbon atoms and boiling below 50° C., wherein the halogen substituents on the halocarbon are chlorine, bromine or fluorine.

3,591,507

FLAME-RESISTANT COMPOSITIONS COMPRISING 1,2 BIS(3,4 - DIBROMOCYCLOHEXYL)-1,2-DIBROMOETHANE AND ANTIMONY TRIOXIDE

William O. Drake and Ernest A. Zuech, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 676,615, Oct. 19, 1967, which is a continuation-in-part of application Ser. No. 502,526, Oct. 22, 1965. This application July 23, 1969, Ser. No. 844,168
The portion of the term of the patent subsequent to Jan. 23, 1985, has been disclaimed
Int. Cl. C09k *3/28*
U.S. Cl. 252—8.1 6 Claims

1,2 - bis(3,4 - dibromocyclohexyl) - 1,2 - dibromoethane (BrBCE) and Sb_2O_3 are used to flame-proof compositions having a flammable organic base.

3,591,508

PROCESS FOR MAKING HEAVY DUTY LIQUID DETERGENT COMPOSITIONS

James M. Huggins, St. Ann, and Robert T. Jorgen, Bridgeton, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 7, 1967, Ser. No. 688,710
Int. Cl. C11d *3/075, 3/26, 11/00*
U.S. Cl. 252—137 1 Claim

Heavy duty liquid detergents in the form of emulsions wherein the organic active is maintained in a dispersed phase, and said dispersed phase is stabilized in a continuous aqueous phase by a polyelectrolyte. The continuous aqueous phase contains a builder combination of sodium tripolyphosphate and potassium nitrilotriacetate.

3,591,509
LIQUID HARD SURFACE CLEANING COMPOSITIONS

Lawrence Roy Parks and William Edward Zenk, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,948
Int. Cl. C11d *3/066*
U.S. Cl. 252—137 6 Claims

Liquid detergent hard surface cleaning compositions containing 0.25% to 4% of a water-soluble synthetic detergent; 0% to 6% of a water-soluble builder or mixture of builders; 1% to 10% of an organic solvent or mixture of solvents; 0.10% to 0.5% of a water-soluble carboxymethylcellulose having a degree of substitution of from about 1 to about 2 and a degree of polymerization from about 1,000 to about 3,000; and water.

3,591,510
LIQUID HARD SURFACE CLEANING COMPOSITIONS

William Edward Zenk, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,949
Int. Cl. C11d *3/066*
U.S. Cl. 252—137 5 Claims

Liquid detergent hard surface cleaning compositions containing 0.25% to 4% of specific short-chain water-soluble synthetic detergent; 1% to 6% of a water-soluble builder or mixture of builders; 1% to 10% of specific organic solvents or mixture of solvents; and water.

3,591,511
CORROSION INHIBITING SYSTEM

Morton W. Leeds, Murray Hill, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.

No Drawing. Filed Dec. 31, 1968, Ser. No. 788,999
Int. Cl. C23g *1/06*
U.S. Cl. 252—148 3 Claims

Aqueous acid solutions are inhibited against corrosion of metals, especially ferrous metals, by incorporation of a corrosion inhibiting-system composed of a combination of an acetylenic carbinol, an acetylenic glycol, and a saturated heterocyclic nitrogen compound mixture derived from gilsonite.

3,591,512
CORROSION INHIBITOR

Morton W. Leeds, Murray Hill, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.

No Drawing. Filed Dec. 31, 1968, Ser. No. 788,997
Int. Cl. C23g *1/06*
U.S. Cl. 252—148 3 Claims

Aqueous acid solutions are inhibited against corrosion of metals, especially ferrous metals, by incorporation of a corrosion-inhibiting system composed of a combination of an acetylenic carbinol and a saturated heterocyclic nitrogen compound mixture derived from gilsonite.

3,591,513
METHOD FOR THE TREATMENT OF SCALE USING DIPOLYETHOXYLATED ALKYLAMINE

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 24, 1968, Ser. No. 739,208
Int. Cl. C02b *5/06*; C07c *87/16*
U.S. Cl. 252—180 5 Claims

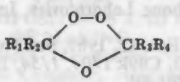
Method of and composition for the treatment of scale, particularly calcium sulfate scale, using a dipolyethoxylated alkylamine containing 8–18 carbon atoms in the alkyl group and a total of 5–15 ethoxy groups.

3,591,514
STABILIZATION OF OZONE DERIVATIVES

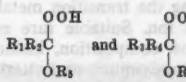
Richard D. Smetana, Beacon, Roger G. Duranleau, Poughquag, and Alfred Arkell, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,766
Int. Cl. C01b *13/00*
U.S. Cl. 252—186 8 Claims

Stabilized compositions comprising an alkali metal fluoride and ozone derivative selected from the group consisting of oxolane of the formula:



and alkoxyhydroperoxides of the formula:



where R_1, R_2, R_3 and R_4 are hydrogen or hydrocarbyl and R_5 is alkyl and a method of producing said stabilized oxolanes and hydroperoxides comprising contacting in the presence of an alkali metal fluoride an olefin of the formula

$$R_1R_2C{=}CR_3R_4$$

with ozone or ozone and alkanol of the formula R_5OH.

3,591,515
PULVERULENT CHLORINE DIOXIDE COMPOSITIONS

Clement F. Lovely, Butler, N.J., assignor to International Dioxide, Inc., New York, N.Y.

No Drawing. Filed Apr. 16, 1968, Ser. No. 721,572
Int. Cl. A61l *13/00*
U.S. Cl. 252—187 8 Claims

Substantially dry pulverulent solid compositions are provided which comprise an effective amount of chlorine dioxide solutions, such as the chlorine dioxide solutions stabilized with peroxy and percarbonate compounds, or a like solution such as the alkaline chlorite solutions, adsorbed on a basic-reacting adsorbent, such as synthetic calcium silicate. These compositions will yield gaseous chlorine dioxide upon acidification to a pH of less than about 6. Preferred acidifying agents include powdered hydrated citric acid or dry acid reacting adsorbents such as silicates having an aqueous solution of an acidic compound, such as ferric chloride or sulfuric acid, adsorbed thereon. The compositions can be used for the preservation of fruits and vegetables being shipped or stored.

3,591,516
FUSED SALT PROCESS FOR PRODUCING RARE EARTH OXYHALIDE AND OXIDE LUMINESCENT MATERIALS

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company

Filed Oct. 23, 1968, Ser. No. 769,940
Int. Cl. C09k *1/08, 1/10*
U.S. Cl. 252—301.4R 11 Claims

A method for the production of well-formed crystals of oxyhalides including oxychlorides and oxybromides, and oxides, of yttrium and the rare earth metals, i.e., elements having atomic numbers 39 and 57 through 71. Particles of the oxide of the selected element are mixed with the ammonium halide of the selected oxyhalide and heated for a time and at a temperature sufficient to cause conversion of the oxide to the oxyhalide and recrystallization of the oxyhalide. This recrystallized oxyhalide can be converted to a corresponding oxide as well-crystallized particles by pyrohydrolysis. Alternatively, the oxyhalide

can be formed by initially firing the oxide particles as a mixture with an alkali carbonate and ammonium halide in order to form the alkali halide in situ prior to the firing step which causes formation and recrystallization of the oxyhalide.

3,591,517
RARE EARTH TERMINATED TRANSITION METAL LASERS
Jan P. van der Ziel, Chatham, and Le Grand G. van Uitert, Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 12, 1969, Ser. No. 798,586
Int. Cl. C09k *1/04, 1/54;* **H01s** *3/16*
U.S. Cl. 252—301.4R **4 Claims**

Type II (three level) transition metal lasers (such as those dependent on Cr^{3+}) are converted to Type III (four-level) by coupling the transition metal ion to an appropriate rare earth ion. Suitable rare earths, included as cations of the host composition, include cerium, europium, terbium, praseodymium, and ytterbium.

3,591,518
SILICA AQUASOLS AND POWDERS
Donald McMillan, Penarth, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of abandoned application Ser. No. 526,230, Feb. 9, 1966. This application Dec. 31, 1968, Ser. No. 788,266
Int. Cl. B01j *13/00;* **C01b** *33/12*
U.S. Cl. 252—313 **12 Claims**

Silica aquasols are made by providing a heel of a silica sol containing aqueous ammonium hydroxide in a reaction vessel. Finely divided silicon metal is introduced into the heel and the metal and water react to form silica. The concentration and surface area of the silica in the heel and the production rate of silica in the reaction mixture are such that the silica formed polymerizes on the heel particles to provide novel, spherical silica particles having a surface area average diameter between 150 and 500 mμ.

3,591,519
METHOD OF PREPARING HYDROPHOBIC SILICA
Francis J. Boylan, Limestone Gardens, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Apr. 25, 1968, Ser. No. 724,258
Int. Cl. B01d
U.S. Cl. 252—321 **7 Claims**

Disclosed is a method of producing hydrophobic silica which comprises contacting a heated hydrocarbon-silica mixture with oxygen.

3,591,520
QUATERNARY ADDUCTS OF POLYEPIHALOHYDRIN AND USE THEREOF
Myron T. McDonald, Houston, Tex., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed Jan. 17, 1968, Ser. No. 698,441
Int. Cl. B01d *17/04*
U.S. Cl. 252—329 **13 Claims**

Fully quaternized adducts of tertiary alkyl amines and polyepihalohydrins are prepared by reacting liquid polyepihalohydrins, preferably polyepichlorohydrin having a molecular weight of at least 3000, with tertiary lower alkylamines and/or oxyalkylated lower dialyklamines. These products are highly water soluble and are compatible with zinc chloride solutions. They are especially useful when added to aqueous zinc chloride solutions or such solutions containing other metal salts for breaking oil-in-water emulsions.

3,591,521
METHOD OF STABILIZING AN ORGANIC SUBSTANCE WITH 5-AMINOURACIL AND 5-AMINOCYTOSINE AND THEIR DERIVATIVES
Taneo Nobukuni, Tokyo, Nobumitsu Yano, Saitama-ken, Masao Fukushima, Tokyo, Aiko Mizuno, Kanagawa-ken, and Fumio Nagayoshi and Toyoharu Takada, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Feb. 27, 1969, Ser. No. 803,054
Claims priority, application Japan, Mar. 5, 1968, 43/13,825; Apr. 27, 1968, 43/27,988
Int. Cl. C08f *45/60*
U.S. Cl. 252—403 **15 Claims**

Various organic substances are stabilized by adding 5-aminouracil, 5-aminocytosine, and/or their derivatives.

3,591,522
REACTIVATION OF GROUP VIII SELECTIVE HYDROGENATION CATALYSTS
Jean Cosyns, 6 Rue de Sannois, Nanterre, Hauts-de-Seine, France, and Jean-François Le Page, 6 Rue Henri Dunant, Rueil-Malmaison, Hauts-de-Seine, France
No Drawing. Continuation-in-part of abandoned application Ser. No. 592,976, Nov. 9, 1966. This application June 13, 1969, Ser. No. 833,190
Claims priority, application France, Nov. 17, 1965, 38,843
Int. Cl. B01j *11/02*
U.S. Cl. 252—414 **12 Claims**

In the selective hydrogenation of highly unsaturated compounds, such as acetylenes and conjugated olefins, to monoethylenic hydrocarbons, said reaction being conducted at about 0–250° C. in the presence of a Group VIII metal, the catalyst becomes deactivated because of the deposit of polymeric or rubbery-like material, and sometimes it is poisoned by sulfurous impurities. The catalyst is reactivated by washing it with inert liquid hydrocarbon at below 200° C., and in subsequent steps, separating the washed catalyst from the liquid, and then contacting the separated catalyst with hydrogen at 200–500° C.

3,591,523
CATALYST AND PROCESS FOR MAKING TERTIARY OLEFIN FEED STOCKS SUITABLE FOR SULFURIC ACID RECOVERY PROCESS
Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed June 27, 1968, Ser. No. 740,761
Int. Cl. C07c *3/54, 11/00*
U.S. Cl. 252—426 **5 Claims**

Methods of preparing olefin conversion catalysts in connection with alkylation operations by reacting a secondary olefin with strong sulfuric acid until no further reaction occurs and concurrently extracting dialkyl sulfates formed therefrom with a hydrocarbon solvent. Catalysts are useful for selectively polymerizing tertiary olefin in the presence of other olefins and to form alkyl sulfates from tertiary olefins. Catalysts prepared from propylene are also effective for conversion of n-butylenes. Catalysts are particularly useful for removal of tertiary olefins from olefin feed stocks charged to absorption sec-

tion of sulfuric acid recovery process operated in conjunction with an alkylation system. In such operation polymers of tertiary olefins are removed from treated olefin feed and the remaining secondary olefins are absorbed in used sulfuric acid alkylation catalyst. Absorbed secondary olefins are extracted as alkyl sulfates with isobutane and passed to alkylation.

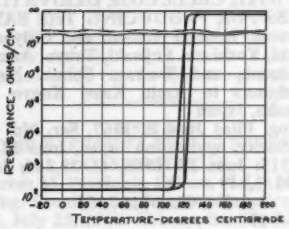
3,591,524
OIL ABSORBENT
Knut Emil Eriksen, Enhorna, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
No Drawing. Filed Nov. 22, 1968, Ser. No. 778,319
Claims priority, application Sweden, Nov. 29, 1967, 16,347/67
Int. Cl. C02b *1/14*
U.S. Cl. 252—427 **12 Claims**

An oil absorbent is provided that is capable of preferentially absorbing oil in the presence of water, and that will float on water for a considerable period of time when loaded with oil, comprising an absorbent carrier having thereon the hydrophobic residue of a heat-decomposed ammonium or amine salt of an aliphatic or cycloaliphatic carboxylic acid and an oil.

3,591,525
MANUFACTURE OF CATALYSTS
Harry Markham, Sheffield, Peter H. Pinchbeck, Chesterfield, and Phillippe Pierre Gaynor, Sheffield, England, assignors to United Coke & Chemicals Company Limited, Yorkshire, England
Filed Mar. 28, 1969, Ser. No. 811,559
Int. Cl. C07c *63/02*
U.S. Cl. 252—440 **2 Claims**

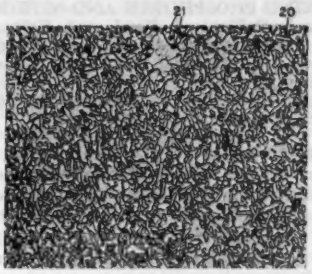
A catalyst consisting of a glass of vanadium pentoxide and potassium pyrosulphate absorbed by silica gel particles is produced by continuously introducing a preheated mixture of silica gel particles and particles of the glass into a hot fluidised bed of the particles. The catalyst, when used in the production of phthalic anhydride, gives a better yield than a similar catalyst produced by a batch process.

3,591,526
METHOD OF MANUFACTURING A TEMPERATURE SENSITIVE, ELECTRICAL RESISTOR MATERIAL
Junshi Kawashima, Osaka, and Hiroyuki Kitamura, Osaka-shi, Japan, assignors to Polyelectric Corporation, Larchmont, N.Y.
Filed Jan. 25, 1968, Ser. No. 704,979
Int. Cl. C08f *1/84*; H01b *1/06*
U.S. Cl. 252—511 **9 Claims**



A method of producing a temperature sensitive, organic electrical resistor material in which a thermoplastic, such as polyethylene, and a conductive material, such as carbon black, are mixed in predetermined proportions and then such mixture is mixed with a thermosetting or thermoplastic molding material and molded to provide a substance exhibiting a relatively low electrical resistance below a temperature range of about 100°–130° C. and a relatively high resistance above said temperature range.

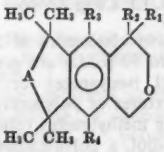
3,591,527
CERAMIC COMPOSITIONS AND METHODS OF MAKING
Yorihiro Murata, North Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,794
Int. Cl. B01k *3/06*; C01b *35/66*; H01b *1/06*
U.S. Cl. 252—518 **16 Claims**



Refractory, hard, wear-resistant and corrosion-resistant compositions especially suitable for fabricating current-conducting elments useful in aluminum refining, are produced by hot pressing a mixture consisting essentially of about 80–99 percent niobium diboride and about 1–20 percent titanium mononitride at about 2000–2200° C.

3,591,528
COMPOSITIONS CONTAINING A TRICYCLIC ISOCHROMAN AS ODORANT
Lambertus Gerke Heeringa and Muus Gerrit Jan Beets, Hilversum, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.
Original application June 20, 1963, Ser. No. 289,261, now Patent No. 3,360,530, dated Dec. 26, 1967. Divided and this application Oct. 19, 1967, Ser. No. 719,279
Claims priority, application Great Britain, July 23, 1962, 28,221/62; Feb. 1, 1963, 28,221/63; Feb. 18, 1963, 6,412/63
Int. Cl. A61k *7/00*; C11b *9/00*
U.S. Cl. 252—522 **5 Claims**

Compositions containing as a musk odorant, a novel tricyclic isochroman having the structural formula



wherein R_1, R_2, R_3, and R_4 are methyl or hydrogen and where either R_3 or R_4 is methyl, the other is hydrogen, and A is methylene, ethylene, ethylidene, 1,2-propylene, or 2,3-butylene, and methods for imparting fragrances using such a tricyclic isochroman.

3,591,529

PHOSPHORUS-CONTAINING POLYAMINES

Hans H. Stockmann, Plainfield, and Joseph Fertig, Elizabeth, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 722,200, Apr. 18, 1968. This application Feb. 2, 1970, Ser. No. 7,983

Int. Cl. C08g *33/16*

U.S. Cl. 260—2P 2 Claims

High molecular weight polyphosphorus amidoamines comprising the products resulting from the reaction of an epihalohydrin with the reaction product of a polyalkylene polyamine and a phosphorus-containing reagent. The resulting chain extended products are applicable for use as pigment retention additives in paper, flocculants, anti-static agents and fire retardants.

3,591,530

PROCESS FOR THE PRODUCTION OF POLYMERS CONTAINING PHOSPHORUS AND NITROGEN

Urs Sollberger, Fullinsdorf, Basel, and Rainer Wolf, Allschwil, Basel, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,201

Claims priority, application Switzerland, Oct. 16, 1968, 15,452/68; May 23, 1969, 7,878/69

Int. Cl. C08g *33/16*

U.S. Cl. 260—2 8 Claims

Phosphorus- and nitrogen-containing polymers which are suitable as flame-proofing agents and are obtained by reacting phosphonitrilic halides, especially the chlorides, with organic compounds containing 2, 3 or 4 aliphatically bound hydroxy groups and optionally heating the reaction products with ammonia, a primary or secondary amine.

3,591,531

FOAMED AND FOAMABLE COPOLYMERS

Gunter Schroeder, Ober Ramstadt-Eiche, and Wolfgang Gaenzler, Darmstadt, Germany, assignors to Rohm & Haas G.m.b.H., Darmstadt, Germany

No Drawing. Continuation-in-part of application Ser. No. 655,766, July 25, 1967. This application Sept. 10, 1968, Ser. No. 758,694

Claims priority, application Germany, Sept. 19, 1967, R 46,932

Int. Cl. C08f *47/10, 45/44, 29/36*

U.S. Cl. 260—2.5 6 Claims

Improved method for making foamable copolymers by dissolving 0.5 to 10 percent by weight of a vinyl polymer in a mixture of urea or dimethylurea and (A) acrylic and methacrylic acid, (B) the amides or nitriles of these acids, and (C) optional additional comonomers, prior to copolymerizing said mixture.

3,591,532

HIGH DENSITY CELLULAR POLYURETHANE ELASTOMER

Lawrence W. Abercrombie and Nabil N. Saaty, Hamden, and Adnan A. R. Sayigh, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 604,625, Dec. 27, 1966. This application June 6, 1968, Ser. No. 734,869

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5AN 14 Claims

Cellular polyurethane elastomers of high density (illustratively from 10 to 50 p.c.f.) are prepared from (1) methylenebis (phenyl isocyanate) or modified forms thereof, including mixtures of polymethylene polyphenyl isocyanates containing methylenebis (phenyl isocyanate), and (2) a polyester diol, a polyalkadiene polyol having a functionality of at least two or a polyether polyol (functionality 2 to 4) and, optionally, (3) a curative, using conventional high density foam procedures. The novel compositions can be used for a variety of purposes including shoe soles, gaskets, shock and sound absorbent applications, and the like.

3,591,533

PROCESS FOR THE PRODUCTION OF POLYAMIDE FOAMS

Hermann Schnell, Krefeld-Uerdingen, and Heinrich Gilch, Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 19, 1967, Ser. No. 654,382

Int. Cl. C08f *47/08;* C08j *1/14*

U.S. Cl. 260—2.5 8 Claims

The invention relates to the production of polyamide foams from the polymerization of lactams in the presence of an organic isocyanate and a metal borohydride.

3,591,534

CURABLE STARCH ADHESIVE MANUFACTURE

Harry E. Dunholter and James C. Jones, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,723

Int. Cl. C08b *25/02*

U.S. Cl. 260—9 10 Claims

Water-resistant or waterproof starch-containing paperboard adhesives are manufactured from a non-water-resistant adhesive by adding an alkaline setting resin of the phenolic aldehyde or ketone-aldehyde type directly to the non-water-resistant adhesive.

3,591,535

HIGH MOLECULAR WEIGHT/LOW MOLECULAR WEIGHT PHENOL-FORMALDEHYDE CURTAIN COATING ADHESIVE COMPOSITION

Reino A. Jarvi, Bellevue, Wash., assignor to Simpson Timber Company, Seattle, Wash.

No Drawing. Continuation-in-part of application Ser. No. 751,687, July 31, 1968. This application July 25, 1969, Ser. No. 845,082

Int. Cl. C08b *21/32;* C08g *5/06, 37/08*

U.S. Cl. 260—14 7 Claims

A phenol-formaldehyde adhesive composition for use in a gravity curtain coater is prepared by mixing together a high molecular weight, highly advance, phenol-formaldehyde resin, a low molecular weight, long-flow, phenol-formaldehyde resin, anionic surfactant having particular characteristics, and a thickening agent in specified portions. The resins are preferably formulated by condensing 1.8 to 1 to 2.2 to 1 moles formaldehyde to phenol under reflux conditions to a viscosity of from 200–250 cps. at 70° F. in the presence of not over 10 wt. percent of an alkaline catalyst based on the weight of the resin constituents, removing and cooling a portion of the resin, heating the remainder of the resin under reflux conditions to a viscosity of from 900–1000 cps. at 70° F., adding the removed resin portion to the remaining portion, and cooling the entire mixture. The final resin mixture has a viscosity of 600–800 cps. at 70° F.

3,591,536

POLYPROPYLENE OR POLY-4-METHYL-PENTENE-1 FIBERS WITH CELLULOSE DERIVATIVES AND A PROCESS FOR PRODUCING THE SAME

Noboru Fukuma, Kenichi Matsui, and Chiyouzi Nakai, Nobeoka-shi, Yoshisato Fujisaki, Tokyo, Atsuo Nakanishi, Yokohama, and Tsukasa Shima, Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 8, 1967, Ser. No. 644,500

Claims priority, application Japan, June 11, 1966, 41/37,315; June 15, 1966, 41/38,244; Jan. 19, 1967, 42/3,349

Int. Cl. D01f *7/02*

U.S. Cl. 260—17 6 Claims

Polypropylene or poly-4-methylpentene-1 fibers, useful in clothing and as interior materials which consist of a composition obtained by mixing:

(A) crystalline polypropylene or crystalline poly-4-methylpentene-1 with

(B) a polymer of at least one member selected from the group consisting of cellulose derivatives, polyester polymers and polyvinyl polymers having a melting point or softening point of less than 200° C. and

(C) a substance of at least one member selected from the group consisting of liquid paraffin, polyalkylene oxide and phthalic acid ester.

The substances are added in amounts of 5–15% (B) and 5–20% (C) by weight respectively, based on the total weight of the composition $(A)+(B)+(C)$.

3,591,537

PRODUCTION OF POLYVINYL AROMATIC COMPOSITIONS

John Mansel Squire, Thorpe, and Michael John Symes, Sutton, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed June 5, 1968, Ser. No. 735,958
Claims priority, application Great Britain, June 22, 1967, 28,800/67
Int. Cl. C08f *19/04, 19/08, 33/02*
U.S. Cl. 260—17 **13 Claims**

Preformed vinyl aromatic polymer and rubber are dissolved in vinyl aromatic monomer. The resulting blend is suspended in water and polymerised to give a toughened polyvinyl aromatic compound such as toughened polystyrene.

3,591,538

OLEFIN POLYMERS HAVING IMPROVED GLOSS

Vernon J. Smith, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 754,959, Aug. 23, 1968. This application May 16, 1969, Ser. No. 825,404
Int. Cl. C08f *19/14, 21/04*
U.S. Cl. 260—23 **12 Claims**

Olefin polymers having improved gloss and decreased haze are prepared by incorporating therein from about 20 to about 500 p.p.m. of a metal salt of a fatty acid and from about 10 to about 2000 p.p.m. of a metal salt of a carboxylic acid containing an aromatic group.

3,591,539

VINYLATED URETHANE OILS

Stephen F. Hudak, Minneapolis, Minn., assignor to Ashland Oil, Inc., Houston, Tex.

No Drawing. Filed May 14, 1969, Ser. No. 824,662
Int. Cl. C08f *25/00*
U.S. Cl. 260—23 **7 Claims**

A coating resin and the process for preparing it comprising the steps of:

(1) reacting 30% to 60% of a drying oil, at least 5% of the oil containing conjugated double bonds, e.g., safflower oil, dehydrated castor oil, with 2% to 25% of an aliphatic polyhydric alcohol, e.g., glycerol, pentaerythritol; and then

(2) adding and reacting up to 30% by weight of an organic polyisocyanate, e.g., toluene diisocyanate, 4,4' - methylene-bis(cyclohexylisocyanate); and then

(3) adding and addition polymerizing 15% to 60% of an ethylenically unsaturated monomer, e.g., styrene, vinyl toluene;

all percentages based on the solid weight of the product.

3,591,540

STABLE, FREE FLOWING PEROXIDE COMPOSITIONS

Arras M. Praskach, Edison, N.J. 08817

No Drawing. Continuation-in-part of application Ser. No. 567,385, July 25, 1966. This application Nov. 12, 1969, Ser. No. 876,040
Int. Cl. C07c *73/06*
U.S. Cl. 260—23 **8 Claims**

A stable free flowing peroxide composition is disclosed consisting essentially of about 45–75 wt. percent of particulate benzoyl peroxide, about 2–30 wt. percent of an inert particulate polyolefin, about 0.05–5 wt. percent of particulate metallic soap of Group II and from about 12–25 wt. percent of water.

3,591,541

EMULSION POLYMERIZATION USING MODIFIED CARBOXYLIC EMULSIFIERS

Robert D. Athey, 100 Kings Highway, Milford, Del. 19963, and Emil G. Sammak, 515 Westwood Drive, and Edward Witt, 567 Westwood Drive, both of Dover, Del. 19901

No Drawing. Filed Sept. 25, 1967, Ser. No. 670,406
Int. Cl. C08d *1/09;* **C08f** *15/40*
U.S. Cl. 260—23.7 **25 Claims**

A polymerization system for producing unique stable latices containing a substantial proportion of bound alkaline sensitive groups which comprises an aqueous emulsion containing a carboxylic emulsifier modified by the presence of a noncationic hydrophilic group in its hydrocarbon chain, e.g., cocoyl sarcosine, and polymerizable monomeric material containing alkaline sensitive groups, e.g., a mixture of butadiene, styrene and itaconic acid or methylol acrylamide, at a pH in a range from acid to substantially neutral. This system (1) supports emulsion polymerization even in low-shear large capacity reactors without the occurrence of excessive prefloc deposition of the resulting polymeric solids, (2) gives reproducible polymerization rates and (3) produces stable latices of useful viscosity having high solids content.

The process for producing the unique stable latices includes effecting polymerization of the polymerizable monomeric material containing alkaline sensitive groups in an aqueous emulsion containing the modified carboxylic emulsifier and having a pH in a range from acid to substantially neutral, e.g., 2 to 6, at temperatures from about 0° C. to about 100° C., and thereafter recovering the resulting latex from the unreacted monomers.

3,591,542

QUICK-SETTING CEMENTITIOUS COMPOSITIONS

Bernard Bonnel, Pierre Allemand, and Pierre Versmee, Lyon, France, assignors to Progil

Filed May 26, 1967, Ser. No. 641,695
Claims priority, application France, June 1, 1966, 47,351
Int. Cl. C08g *51/04, 51/24*
U.S. Cl. 260—29.4 **10 Claims**

A quick-setting cementitious composition having exceptional resistance qualities including a quick setting hydraulic binder and the polymer formed in situ from an aqueous solution of acrylamide and formaldehyde and a polymerization catalyst; the polymer constituting 3–10% of the total weight of the final product.

3,591,543

TIME CONTROLLED GELATION OF POLYVINYL ALCOHOL WITH CHROMIC ION

Edward Philip Stafford, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 9, 1969, Ser. No. 831,772
Int. Cl. C08f *29/26*
U.S. Cl. 260—29.6 **14 Claims**

Method of gelling polyvinyl alcohol at controlled rates which comprises mixing an aqueous solution consisting essentially of (a) water, (b) polyvinyl alcohol which is at least about 85 mole percent hydrolyzed and has a molecular weight which provides a Hoeppler viscosity of about 4 to 150 centipoises in an amount sufficient to provide a Brookfield viscosity of at least 20 centipoises, (c) a water-soluble chromic salt in an amount sufficient to provide about 1 to 100 parts of chromic ion per 100 parts

of polyvinyl alcohol, and (d) a water-soluble organic acid salt selected from the group consisting of ammonium, alkali metal and alkaline earth metal salts of organic acids of 1 to 6 carbon atoms in an amount sufficient to provide about 0.05 to 9 equivalents of organic acid anion per equivalent of chromic ion, with sufficient water-soluble strong alkaline material to provide a pH of at least about 8 and cause gelation of said polyvinyl alcohol within 10 seconds to 2 hours, the resulting basic solution containing sufficient polyvinyl alcohol to provide an initial Brookfield viscosity of about 20 to 400 centipoises. This method of gelation is particularly useful for soil stabilization and the preparation of filled compositions and foams.

3,591,544

POLYMERISABLE MONOMERS

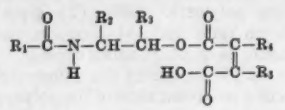
John Joseph Hopwood, Glen Waverley, Victoria, Australia, assignor to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Filed July 28, 1969, Ser. No. 845,558

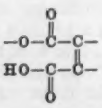
Int. Cl. C08f *3/62, 15/00, 27/04*

U.S. Cl. 260—29.6 **4 Claims**

Novel polymerisable monomers, homopolymers and copolymers thereof. The monomers are internal esters of ethylenically unsaturated esters of the formula:



The structure



is in the cis-configuration relative to the double bond contained therein.

3,591,545

FLAME-RETARDANT PAINT

Kay Ove Anderson, 7224 Verdugo Crestline, Tujunga, Calif. 91042

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,236

Int. Cl. C08f *45/04, 45/50;* **C09d** *5/18*

U.S. Cl. 260—30.6 **2 Claims**

A flame retarding paint composition suitable for outdoor or indoor use is formulated which may be applied in one step to provide a tough, durable coat and which is also resistant to weathering. The paint composition comprises a blend of vinyl chloride polymers, perchloroethylene, chlorinated hydrocarbons, alkyl aryl phosphate, asbestos, mica, antimony oxide-silicon dioxide mix, titanium dioxide, basic lead carbonate, barium phosphate, barium sulfate and mineral spirits.

3,591,546

ACRYLONITRILE-BUTADIENE-STYRENE RESIN COMPOSITIONS

Ronald J. Christmas and Sverre S. Steen, Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited

No Drawing. Filed Aug. 22, 1968, Ser. No. 754,707

Int. Cl. C08d *13/22;* **C08k** *1/36*

U.S. Cl. 260—31.2N **4 Claims**

An ABS resin especially suitable for electroplating is prepared by blending the resin with a small amount of an organic ester of a long chain fatty acid, e.g. butyl stearate.

3,591,547

URETHANE COATING COMPOSITIONS BASED ON POLYOLS PREPARED FROM FLUORINATED GLYCIDYL ETHERS

Max M. Boudakian, Hamden, Maurice C. Raes, Branford, and Venkataramaraj S. Urs, Cheshire, Conn., assignors to Olin Corporation

No Drawing. Filed Apr. 12, 1968, Ser. No. 721,048

Int. Cl. C08g *22/10, 51/28, 51/34*

U.S. Cl. 260—32.8 **13 Claims**

Isocyanate-terminated prepolymers are prepared by reacting a polyether polyol prepared from a fluorinated glycidyl ether, a polyfunctional initiator, and preferably an alkylene oxide, with an organic diisocyanate. Urethane-forming coating compositions can be prepared by admixing these prepolymers with an inert organic solvent. The isocyanate-terminated prepolymers and urethane-forming coating compositions are cured to provide urethane coatings having superior chemical and mechanical properties.

3,591,548

STABILIZED INTERCONNECTED SBR COPOLYMER

Joseph A. Beckman, Kenneth C. Eberly, and Edward L. Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 16, 1969, Ser. No. 833,686

Int. Cl. C08c *11/04, 11/22*

U.S. Cl. 260—33.6AQ **5 Claims**

An unvulcanized, interconnected (linear rubbery polymer) is stabilized by means of a borate of a metal such as magnesium, zinc or lead. In the resulting polymer, butadiene-styrene copolymer units are interconnected by silicon tetrachloride.

3,591,549

REACTION PRODUCTS OF DIOCTYLTIN OXIDE AND DIOCTYLTIN MONOHYDRIC ALIPHATIC SATURATED ALCOHOL THIOGLYCOLATE ESTERS AND POLYVINYL CHLORIDE RESIN COMPOSITIONS STABILIZED THEREBY

Lawrence R. Brecker, Brooklyn, and Otto S. Kauder, Jamaica, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,915

Int. Cl. C08f *45/62, 45/22*

U.S. Cl. 260—45.75 **6 Claims**

Dioctyltin oxide-dioctyltin monohydric aliphatic saturated alcohol thioglycolate ester reaction products are provided, which are particularly useful as stabilizers for polyvinyl chloride resins.

3,591,550

POLYETHYLENE TEREPHTHALATE STABILIZED WITH SULFUR

Robert Nitschmann, Steinebach, Germany, and Wolfgang Griehl, Chur, Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed June 6, 1969, Ser. No. 831,231

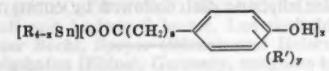
Int. Cl. C08g *51/56*

U.S. Cl. 260—45.7S **2 Claims**

Sulphur is added to a polyester mass during production or processing thereof. The resultant sulphur containing polyester has improved tensile strength and adherence to rubber.

3,591,551
ORGANOTIN STABILIZERS FOR POLYVINYLCHLORIDE
Toshio Seki, Osaka-shi, Yasuo Hiyama, Amagasaki-shi, and Yoshitaka Sato, Moriguchi-shi, Japan, assignors to Nitto Kasei Co., Ltd., Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 615,895, Feb. 14, 1967. This application Oct. 23, 1969, Ser. No. 868,933
Claims priority, application Japan, Feb. 15, 1966, 41/8,605
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 3 Claims

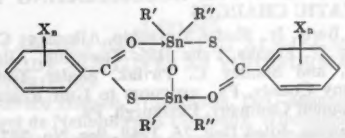
Novel organotin compounds are provided for use with known organotin preservatives for vinylchloride resins to stabilize synthetic resins against degradation by thermal oxidation, said compounds having the formula



wherein R is selected from the group consisting of alkyl of from 1 to 18 carbon atoms, cycloalkyl, aryl, and benzyl, R′ is alkyl of from 1 to 12 carbon atoms, *x* and *y* each are integers of from 1 to 3 inclusive, and *z* is an integer of from 0 to 2 inclusive, at least one R′ group being adjacent to —OH group in the phenolic group, and stabilized synthetic resins having incorporated therein an inhibiting amount of said organotin compounds.

3,591,552
STABILIZED VINYL HALIDE RESIN COMPOSITIONS
Samuel Hoch, Brooklyn, N.Y., assignor to Tenneco Chemicals, Inc.
No Drawing. Continuation-in-part of application Ser. No. 677,861, Oct. 25, 1967. This application Dec. 15, 1969, Ser. No. 885,292
Int. Cl. C08g *45/62*
U.S. Cl. 260—45.75 4 Claims

Vinyl halide resin compositions contain as stabilizer basic organotin compounds that have the structure



wherein each X represents a lower alkyl group; each *n* represents an integer in the range of zero to two; and each R′ and R″ represents an alkyl group having 4 to 8 carbon atoms, an alkaryl group, an aralkyl group, a cycloalkyl group, or an aryl group.

3,591,553
ALKYLPHENYL 4 - HYDROXYISOPHTHALATES AND THEIR USE AS ULTRAVIOLET LIGHT STABILIZERS
Gerald R. Lappin and Gordon C. Newland, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Dec. 26, 1968, Ser. No. 787,276
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 12 Claims

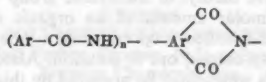
Alkylphenyl 4-hydroxyisophthalates are colorless compounds useful as ultraviolet light stabilizers for a variety of thermoplastic resins, particularly polyolefins such as polypropylene.

3,591,554
CURABLE POLYEPOXIDES PRODUCED BY METAL HYDRIDE OR ALKOXIDE CATALYST
René Jan Al, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 26, 1968, Ser. No. 762,974
Int. Cl. C08g *30/00, 30/10*
U.S. Cl. 260—47 2 Claims

Reaction is brought about between a polyepoxide of relatively low epoxide equivalent weight and epihalohydrin, or between a bisphenol and epihalohydrin, to obtain high epoxide equivalent weight polyepoxide resins of remarkable purity, in a reaction employing an alkali metal hydride or an alkali metal alkoxide as catalyst.

3,591,555
POLY-AMIDES-IMIDES AND THEIR PROCESS OF MANUFACTURE
Guy Rabilloud, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, Hauts-de-Seine, France
No Drawing. Filed Dec. 3, 1968, Ser. No. 780,900
Claims priority, application France, Dec. 6, 1967, 131,257
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 11 Claims

Poly-amide-imide consisting essentially of a chain of the same of different repeating units of the general formula:



in which *n* is an integer from 1 to 10, Ar is a divalent radical of 2–22 carbon atoms and Ar′ a trivalent aromatic radical of 3–22 carbon atoms.

3,591,556
CURING AGENT COMBINATIONS OF SULFONAMIDES AND POLYOXYALKYLENE POLYAMINES FOR POLYEPOXIDES
Norman Bell Godfrey and Heinz Schulze, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Filed Sept. 30, 1968, Ser. No. 763,916
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 21 Claims

Epoxy resins from polyepoxides cured in the presence of amides of the formula $(RSO_2NH)_nR'$ and polyoxyalkylenepolyamines have fast and efficient low temperature cures and improved physical properties compared to epoxides cured with the amides alone or the polyoxyalkylenepolyamines alone. The cured epoxy resin compositions of this invention are useful plastics for coatings, castings, sealants and adhesives. Molds with improved physical properties are obtained using epoxy resins of this invention.

3,591,557
NOVEL FILM-FORMING HETEROCYCLIC COPOLYMER AND PROCESS FOR PRODUCING THE SAME FROM DIAMINODIAMIDO COMPOUNDS
Yasuo Miyadera, Tatuo Masuko, Tadashi Muroi, Michio Kikkawa, Hiroshi Noguchi, Shinichi Okada, and Hideo Kawashima, Hitachi-shi, Japan, assignors to Hitachi, Ltd., Hitachi Cable, Ltd., and Hitachi Chemical Company, Ltd., all of Tokyo, Japan
No Drawing. Filed Oct. 1, 1968, Ser. No. 764,317
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 24 Claims

A solid heterocyclic copolymer which is heat-stable and capable of forming cast film and fiber, especially useful

for making abrasion- and alkali-resistant insulated wire, having a repeating unit of a combination of aromatic nucleus-fused bis(benzoylene quinazolone) and/or bis(benzoylene-4-thia-1,3-diazine dioxide) and N,N'-arylene-diisoindole dione. The polymer is produced by reacting aromatic diaminodiamido compounds and aromatic diamines with aromatic tetracarboxylic acid dianhydrides to form a new copolyamide, and cyclizing under dehydration the copolyamide.

3,591,558

POLYMERS PREPARED FROM ORGANIC COMPOUNDS CONTAINING AN ACTIVE METHYL OR METHYLENE GROUP AND AN ORGANIC DIHALIDE AND METHOD OF PREPARATION

Derek Brown, Michael Edward Benet Jones, and William Ramsey Maltman, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of application Ser. No. 685,961, Nov. 27, 1967. This application Dec. 15, 1969, Ser. No. 882,354

Claims priority, application Great Britain, Dec. 12, 1966, 55,602/66

Int. Cl. C08g *15/00, 15/02, 25/00*

U.S. Cl. 260—47R **11 Claims**

A process for the production of a polymeric material by the polycondensation of an organic compound containing an active methyl or methylene group with a substantially equimolar amount of an organic dihalide, in the presence of specified proportions of a base. The process is preferably carried out in solution. Also, new polymeric materials which may be prepared by this process.

3,591,559

ALL AROMATIC POLYSULFONAMIDES AND METHOD OF PREPARATION

Stephanie Louise Kwolek, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,923

Int. Cl. C08g *20/00, 20/20*

U.S. Cl. 260—49 **5 Claims**

High molecular weight all-aromatic polysulfonamides are prepared by a solution polymerization of selected monomers and are useful in the preparation of shaped articles (e.g., fibers and films).

3,591,560

POLYURETHANES FROM BIURET-CONTAINING ORGANIC POLYISOCYANATES

Kuno Wagner, Otto Bayer, and Rudolf Schroter, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 12, 1963, Ser. No. 308,346, now Patent No. 3,441,588, dated Apr. 29, 1969. Divided and this application July 31, 1968, Ser. No. 763,457

Claims priority, application Germany, Sept. 19, 1962, F 37,835

Int. Cl. C08g *22/20*

U.S. Cl. 260—77.5 **2 Claims**

Polyurethane plastics are prepared by a process which comprises reacting an organic compound containing at least two active hydrogen containing groups as determined by the Zerewitinoff method with an organic polyether polyisocyanato biuret.

3,591,561

PROCESS OF PRODUCTION OF POLYURETHANE ELASTOMER FROM A MIXTURE OF A LACTONE POLYESTER POLYOL AND A LOW MOLECULAR WEIGHT ALIPHATIC DIOL

Seiji Kazama, Suita, Osaka, and Fumihiro Doura, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 29, 1967, Ser. No. 663,947

Claims priority, application Japan, Aug. 29, 1966, 41/57,100

Int. Cl. C08g *22/10*

U.S. Cl. 260—77.5 **6 Claims**

Polyurethane elastomer having good physical properties is produced by reacting organic diisocyanate with polyol mixture consisting of lactone polyester polyol and low molecular aliphatic diol, followed by curing the resultant product.

3,591,562

HETEROCYCLIC POLYMERS

Tad L. Patton, Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed Nov. 24, 1967, Ser. No. 685,311

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 **7 Claims**

New heterocyclic polymers having the same heterocyclic ring system are produced by the reaction of diisocyanates with hydrogen cyanide, by the reaction of dicyanoformamides with diisocyanates, and by the polymerization of cyanoformamidyl isocyanates in the presence of an effective catalyst. The heterocyclic polymers are characterized by repeating units which contain either or both 4-imino-1,3-imidazolidine-2,5-dione-1,3-diyl rings and 5-imino-1,3-imidazolidine-2,4-dione-1,3-diyl rings. The imino group on the foregoing rings may be modified by replacement of the imino hydrogen by acyl groups such as carbamoyl or the imino group may be replaced with oxygen.

3,591,563

ANTISTATIC PROTECTION FOR PLASTIC HAVING A PROPENSITY FOR ACCUMULATING ELECTROSTATIC CHARGES

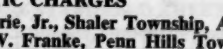
Walter P. Barie, Jr., Shaler Township, Allegheny County, Norman W. Franke, Penn Hills Township, Allegheny County, and Stanley C. Paviak, Shaler Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,241

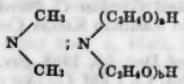
Int. Cl. C08g *20/38*

U.S. Cl. 260—78 **16 Claims**

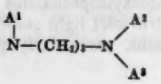
Isomeric monoamine mixtures of the various individual compounds represented by the following formula:



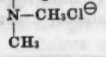
wherein the total number of carbon atoms in the linear paraffin chain is from about 8 to 22; wherein X is a whole number from about 0 to 19 and Y is a whole number from about 0 to 19; and wherein M is a member selected from the group consisting of NH_2; acetate and hydrochloride salts of NH_2;



wherein *a* and *b* are each greater than zero;



wherein A^1, A^2, and A^3 are selected from the group consisting of hydrogen and $(C_2H_4O)_xH$ where x is one or greater; and



are used as effective antistatic agents for plastics. In practice, these compounds are preferably mixtures of substantially equal amounts of the various monoamine isomers wherein the monoamine is attached to a different internal carbon atom.

3,591,564

TRANSPARENT POLYAMIDES FROM TETRAHYDROTRICYCLOPENTADIENYLENE DIAMINES

Paul Raff and Ludwig Schuster, Ludwigshafen (Rhine), Guenter Becht, Speyer (Rhine), and Helmut Doerfel, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

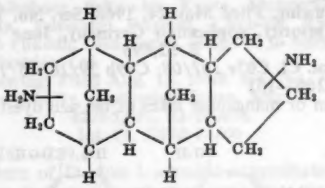
Original application Oct. 26, 1965, Ser. No. 505,291, now Patent No. 3,505,402, dated Apr. 7, 1970. Divided and this application Apr. 3, 1968, Ser. No. 738,739

Claims priority, application Germany, Oct. 29, 1964, B 79,115; Mar. 27, 1965, P 15 70 246.2

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 **3 Claims**

Production of transparent polyamides of tetrahydrotricyclopentadienylene diamines having the formula:



wherein said diamines are polycondensed with dicarboxylic acids, dicarboxylic esters or dicarboxylic chlorides at elevated temperature, and new polyamides containing said diamines.

3,591,565

POLYAMIDES CONTAINING ALKALI METAL HALIDE ADDITIVES AS VOID FORMATION INHIBITORS

John Edward Hansen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 673,287, Oct. 6, 1967. This application Aug. 15, 1969, Ser. No. 850,665

Int. Cl. C08g *20/00*; D02g *3/00*

U.S. Cl. 260—78 **1 Claim**

Polyamide compositions containing a synthetic polyamide intimately mixed with 1.0 to 10 percent by weight of certain lithium halides are spun into large diameter, void-free, high tenacity monofilaments which are useful, for example, in zippers and tire cord.

3,591,566

BETA LACTONE POLYMERIZATION PROCESS WITH HETEROCYCLIC CATALYSTS

Klaas Ruyter and Johan van Olmen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,766

Claims priority, application Great Britain, Jan. 8, 1968, 1,053/68

Int. Cl. C08g *17/017*

U.S. Cl. 260—78.3 **8 Claims**

An improved process for bulk polymerization of one or more betapropiolactones, at least 50% mole being pivalolactone, in the presence of organic heterocyclic initiators, wherein the heteroatom is from the group comprising phosphorous, arsenic, antimony, sulfur, selenium or tellurium, or in the presence of "onium" addition compounds of such initiators.

3,591,567

METHOD FOR PRODUCING INTERNALLY PLASTICIZED COPOLYMER OF VINYL CHLORIDE AND A HIGHER ALKYL ESTER OF CROTONIC ACID

Yuzo Chihara, deceased, late of Yokohama, Japan, by Waka Chihara, legal representative, 21, 11 Matsukagecho, Hakodate-shi, Hokkaido, Japan, and Ryoji Takahashi, 21 Otsutomacho, Yokohama, Japan

No Drawing. Continuation-in-part of application Ser. No. 561,722, June 30, 1966. This application Sept. 5, 1969, Ser. No. 870,591

Claims priority, application Japan, July 10, 1965, 40/41,357

Int. Cl. C08f *15/26*

U.S. Cl. 260—86.3 **10 Claims**

This invention relates to a method for producing an internally plasticized vinyl chloride copolymer having excellent transparency in films, processability, and heat stability, which comprises copolymerizing 100 parts by weight of vinyl chloride and between about 1 to 40 parts by weight of a higher alkyl ester of crotonic acid having 12 to 20 carbon atoms in the alkyl group.

3,591,568

POLYMERIZATION PROCESS

Elliott Farber, Trenton, N.J., assignor to Tenneco Chemicals, Inc.

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,367

Int. Cl. C08f *1/11*

U.S. Cl. 260—87.1 **8 Claims**

Process for production of solution-grade poly(vinyl chloride-vinyl acetate) copolymers by suspension polymerization of vinyl chloride and vinyl acetate monomers in the presence of an alkylated poly(vinyl pyrrolidone) as a protective colloid and utilizing incremental addition of monomeric vinyl chloride to the reaction mixture.

3,591,569

FREE-FLOWING SINTERED GRANULES OF THERMOPLASTIC ORGANIC POLYMERS

Jerry D. Ilavsky, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 2, 1969, Ser. No. 829,804

Int. Cl. C08d *3/04, 5/02*; C08f *15/04*

U.S. Cl. 260—88.2 **10 Claims**

Free-flowing sintered granules of normally solid, water-insoluble, thermoplastic organic polymers such as the ethylene polymers are prepared by (1) dispersing a fine powder of the polymer in a non-solvent liquid medium, (2) heating the resulting dispersion to a temperature from about 1° C. below the Vicat softening point of the polymer to about 8° C. thereabove while subjecting the dispersion to agitation and (3) cooling the dispersion under continued agitation.

3,591,570

COPOLYMERS OF PROPYLENE OXIDE AND ALLYL GLYCIDYL ETHERS

Arthur E. Gurgiolo and Robert W. McAda, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Sept. 3, 1964, Ser. No. 394,301. Divided and this application Sept. 20, 1968, Ser. No. 798,483

Int. Cl. C08f *7/12*

U.S. Cl. 260—88.3 **9 Claims**

Vulcanizable and vulcanized copolymers of propylene oxide are made by the copolymerization of propylene

oxide with a glycidyl ether containing an allylic terminal group such that at least one oxyalkylene or thioalkylene group intervenes between the glycidyl group and the allylic group of the monomer.

3,591,571
SUPERCHLORINATED POLYVINYL CHLORIDE AND METHOD OF PRODUCING IT

Georgette Steinbach-Van Gaver, Paris, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Paris, France

No Drawing. Filed Feb. 15, 1966, Ser. No. 527,476
Claims priority, application France, Feb. 16, 1965, 5,758
Int. Cl. C08f *27/02, 27/03*
U.S. Cl. 260—92.8 **14 Claims**

Process for the production of superchlorinated polyvinyl chloride and product thereof. The PVC is swollen in a first step by insufflating with gaseous chloro-hydrocarbon of which chloroform is preferred. The swollen PVC is suspended in a concentrated aqueous solution of HCl. Chlorine is then passed into the suspension to about saturation, after which the suspension is irradiated with ultraviolet rays, while chlorination is continued to the desired value. The process is of relatively short duration, efficient in use of ingredients and reactants, and gives a high quality of SPVC of uniform granulometry and precise control of chlorine percentage of finished product.

3,591,572
POLYMERIZATION PROCESS USING N-HYDROCARBYL - N - METHYLENE SULFONATES AS DISPERSING AGENTS

Walter Stamm, Tarrytown, N.Y., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 622,445, Mar. 13, 1967. This application June 19, 1968, Ser. No. 738,092
Int. Cl. C08f *1/13, 3/30, 15/02*
U.S. Cl. 260—92.8 **6 Claims**

The invention is a process for preparing polymers by dispersion polymerization techniques using an N-hydrocarbyl N-methylene sulfonate as a dispersing agent.

3,591,573
REACTION PRODUCTS OF PETROLEUM HYDROCARBON-INSOLUBLE PINE WOOD RESIN AND PROPYLENE OXIDE

Jay B. Class, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 630,552, Apr. 13, 1967, which is a continuation-in-part of application Ser. No. 435,348, Feb. 25, 1965. This application Nov. 7, 1968, Ser. No. 774,214
Int. Cl. C09f *1/04*
U.S. Cl. 260—103 **2 Claims**

A resinous reaction product is prepared by reacting a petroleum hydrocarbon-insoluble pine wood resin and propylene oxide. The resinous reaction product is substantially free of polyether chains.

3,591,574
TRI-N-PHENYLGLYCYL DERIVATIVES OF INSULIN

Richard L. Fenichel, Wyncote, Norman H. Grant, Wynnewood, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed May 29, 1968, Ser. No. 732,812
Int. Cl. A61r *17/02;* **C07c** *103/52*
U.S. Cl. 260—112.7 **2 Claims**

Acyl-substituted-insulins, particularly phenyl- and substituted-phenylglycyl-insulins, especially N-phenylglycyl-insulin, N-p-methylphenylglycyl-insulin and N-p-chlorophenylglycyl-insulin (I), are prepared by treating insulin with an acylating agent, especially the corresponding N-chloroformyl-N-phenyl or substituted-phenylglycin (II). The new compounds (I) have hypoglycemic activity and are useful to treat diabetes, especially in subjects who are insulin fast.

3,591,575
PREPARATION OF DIAZONIUM COMPOUNDS

Eugene Golda, Bronx, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

No Drawing. Filed Aug. 14, 1967, Ser. No. 660,220
Int. Cl. C07c *113/00;* **C23f** *11/14*
U.S. Cl. 260—141 **9 Claims**

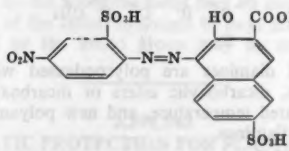
A method for making a storage-stable, moisture-resistant, light-sensitive diazonium compound in dry powder form by reacting a light-sensitive, water-soluble diazo compound with a hydroxyl-containing coupling agent therefor in an aqueous medium at a pH of about 1.5 to about 7.5 substantially to avoid resinification and loss of light-sensitivity, and recovering the precipitated diazonium compound reaction product.

3,591,576
CALCIUM OR MANGANESE LAKES OF PHENYL-AZO-NAPHTHOL ACID DYESTUFFS

Heinz Haubrich, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 24, 1968, Ser. No. 731,711
Claims priority, application Germany, June 3, 1967, F 52,595
Int. Cl. C07c *107/08;* **C09b** *29/16, 45/14*
U.S. Cl. 260—151 **1 Claim**

Calcium or manganese lakes of the azo dyestuff of the formula



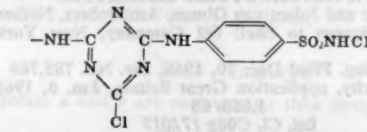
are produced for use as pigment dyestuffs, adapted for incorporation in lacquers and varnishes, synthetic materials, spinning masses and in the field of paper and textile printing. The lakes exhibit particularly good light fastness properties.

3,591,577
REACTIVE TRIAZINE CONTAINING AZO DYESTUFFS

Ugo Moiso, Cesano Maderno, Milan, and Giulio Craia, Saronno, Varese, Italy, assignors to Aziende Colori Nazionali Affini Acna S.p.A., Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 349,158, Mar. 3, 1964. This appplication July 19, 1968, Ser. No. 746,002
Int. Cl. C09d *62/08;* **D06p** *1/02*
U.S. Cl. 260—153 **7 Claims**

Reactive dyestuffs of the azo or anthraquinone series wherein the dyestuff radical is bonded, through a benzene or naphthalene nucleus, to the radical,



and wherein the dyestuff radical contains 2 or 3 SO_3H substituents as well as at least one substituent selected

from the group consisting of —OH, —COOH, —NH_2, —NO_2, benzoylamino, chlorine, and —R_3, —R_3OH and R_3CONH— radicals, wherein R_3 is an alkyl chain having from 1 to 4 carbon atoms, and metallized complexes of one or two molecules of the foregoing dyestuffs with a heavy metal selected from the group consisting of copper, chromium and cobalt. Cellulose or cotton fabrics dyed with the foregoing dyestuffs.

3,591,578
PROCESS FOR TREATING POLYSACCHARIDES PRODUCED BY FERMENTATION

Pierre Colin and Victor Guibert, Melle, Deux-Sevres, France, assignors to Melle-Bezons, Melle, Deux-Sevres, France

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,102
Claims priority, application France, Apr. 29, 1968, 484
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 **6 Claims**

In the tretament of polysaccharides obtained by fermentation in a must or broth and from which the polysaccharide is recovered by precipitation, the improvement which comprises heating the broth prior to precipitation at a temperature within the range of 80° to 130° C. for a time within the range of 10 to 120 minutes while at a pH within the range of 6.3 to 6.9.

3,591,579
RESOLUTION OF AMINO-CAPROLACTAMS

Yasuo Shibahara, Sakyo-ku, Kyoto, Motoyuki Suzuki, Hirakata, Yoshihiro Hayashi, Ukyo-ku, Kyoto, and Toshiro Fukuda, Otsu, Japan, assignors to Sanyo Chemical Industries, Ltd.

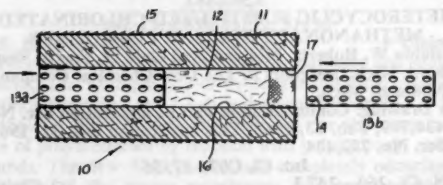
No Drawing. Filed Aug. 13, 1968, Ser. No. 752,175
Claims priority, application Japan, Aug. 25, 1967, 42/55,051, 42/55,052
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 **8 Claims**

A mixture of D- and L-α-amino-ε-caprolactams is resolved into its enantimorphs by converting the mixture, e.g. as the DL-aminolactam, into the salts with certain specific sulfonic acids, more especially with β-naphthalene-1-sulfonic acid or with 2-naphthyl amino-1-sulfonic acid, and then resolving the salts into the optically active isomers by crystallizing from a supersaturated solution thereof in a solvent (water or water-miscible organic solvent).

3,591,580
FILTER CONSTRUCTION FOR A FLUID-SOLID SEPARATION

Frank Arthur Winterhalter, Toledo, and Ronald Buxton Raab, Perrysburg, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed Jan. 17, 1969, Ser. No. 792,005
Int. Cl. B01d *27/00*
U.S. Cl. 210—232 **8 Claims**



Fluid-solid separating filter construction for a filtering medium having an internal channel for fluid influence and/or effluence and a reinforcing tube for the channel of the filtering medium which is hollow and perforated to distribute or collect and conduct the influent or effluent to or from the filtering medium, wherein the channel of the filtering medium and the reinforcing tube are cooperatively arranged to provide a press grip therebetween and thus securely fix the intermediately inserted ends of a protective retaining covering enveloping the filtering medium to hold the same in position.

3,591,581
4,5-EPOXY-1,3,4,5-TETRAHYDRO-2H-1,4-BENZODIAZEPIN-2-ONES

George Francis Field, West Caldwell, Robert Ye-Fong Ning, Verona, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 766,649, Oct. 10, 1968. This application June 23, 1969, Ser. No. 835,720
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 **24 Claims**

4,5-epoxy - 1,3,4,5 - tetrahydro-2H-1,4-benzodiazepin-2-ones are prepared by light irradiation of a correspondingly substituted 1,3-dihydro-2H-1,4-benzodiazepin-2-one 4-oxide. The epoxy compounds are useful as sedatives, muscle relaxants and anticonvulsant agents. These compounds have also exhibited antibacterial activity against certain specific organisms.

3,591,582
PROCESS FOR PREPARING ALPHA-ACYLOXY KETONE STEROIDS

Francisco Alvarez, Palo Alto, Calif., assignor to Syntex Corporation

No Drawing. Original application Aug. 29, 1966, Ser. No. 575,556, now Patent No. 3,453,295, dated July 1, 1969. Divided and this application Feb. 12, 1969, Ser. No. 817,598
Int. Cl. C07c *169/28*
U.S. Cl. 260—239.55 **4 Claims**

This discloses a process useful for preparing 3-keto-19-nor-$\Delta^{4,9(10)}$ steroids, which have known uses, by treating the corresponding 3-keto-10-carboxy-Δ^5 steroids with about one molar equivalent of a positive halogen ion releasing agent in an organic tertiary amine solvent. Also disclosed is a process useful for preparing 2β,19-oxido steroids, which can be converted in accordance with known procedures to useful steroids, by similar treatment of the corresponding 3-keto-10-carboxy-5α or -5β steroid or of a 3-keto-10-carboxy-$\Delta^{4,6}$ steroid. A similar process useful for preparing known and useful α-acyloxy keto steroids from the corresponding keto steroids containing an α-hydrogen atom is also disclosed.

3,591,583
STEROIDAL LACTONES

Yvon Lefebvre, Pierrefonds, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,828
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.57 **10 Claims**

There are disclosed herein steroidal lactones of 4-hydroxy-2-butenoic acid in which the lactone ring is attached in position 3 to the 17α-position of the steroid, with the steroids being selected from 3,17β-dihydroxyestra-1,3-5(10)-trienes, 3,17β - dihydroxyestra-1,3,5(10),6,8-pentaenes and 3,17β-dihydroxy-7α,8-epoxyestra-1,3,5(10)-trienes. The 3-hydroxy group on the steroid nucleus may also carry an acyl substituent containing from 2 to 4 carbon atoms, an alkyl substituent containing from 1 to 4 carbon atoms or a cycloalkyl substituent containing from 5 to 6 carbon atoms. The process for preparing the steroidal lactones of this invention comprises treating the

corresponding 17α-furyl-substituted steroids with an organic peracid in the presence of a nucleophilic reagent, thus obtaining as intermediates the corresponding steroidal 4,4-dihydroxy-2-butenoic acid lactones, in which the 4-hydroxy group may be acylated, if desired. Treatment of said intermediates with sodium borohydrides yields the steroidal lactones of this invention. Said last-named compounds are highly active estrogens and methods for their use are also disclosed.

3,591,584

BENZOTHIAZINE DIOXIDES

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Aug. 27, 1968, Ser. No. 767,594
Int. Cl. C07d *93/02*
U.S. Cl. 260—243 **37 Claims**

A series of novel 3,4-dihydro-4-oxo-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxides and 3,4-dihydro-3-oxo-2H - 1,2-benzothiazine-4-carboxamide 1,1-dioxides have been prepared, including 3,4-dihydro-2-methyl-4-oxo-2H-1,2-benzothiazine-3-carboxanilide 1,1-dioxide, 3,4-dihydro - 2 - methyl-4-oxo-N-(2-thiazolyl)-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide, 2′,4′-dichloro-3,4-dihydro-2 - methyl - 3 - oxo-2H-1,2-benzothiazine-4-carboxanilide 1,1-dioxide and 4′-bromo-3,4-dihydro-2-methyl-3-oxo-2H-1,2-benzothiazine-4-carboxanilide 1,1-dioxide. All these compounds are useful in therapy as non-steroidal anti-inflammatory agents. Alternate methods of preparation are provided and some of these synthetic routes are described in great detail.

3,591,585

PROCESS FOR MAKING DESACETOXYCEPHALOSPORINS

Lowell D. Hatfield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Feb. 14, 1969, Ser. No. 799,504
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 **11 Claims**

Desacetoxycephalosporin esters, useful in preparing cephalosporin antibiotics, e.g., cephalexin, are prepared in improved yields by heating a penicillin sulfoxide ester dissolved in a tertiary carboxamide containing solvent in the presence of sulfonic acid while providing a means for removing or inactivating water in the reaction mixture.

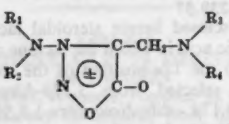
3,591,586

3-TERTIARY AMINO-4-TERTIARY AMINOMETHYL-SYDNONES

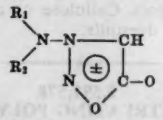
Yoshio Imashiro, Osaka, and Katsutada Masuda, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 16, 1968, Ser. No. 721,627
Int. Cl. C07d *87/40*
U.S. Cl. 260—246 **30 Claims**

Novel analgesic sydnone derivatives of the formula:



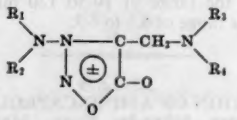
and pharmaceutically acceptable salts thereof wherein each of R_1 and R_2 is methyl or allyl or R_1 and R_2 taken together with the adjacent nitrogen atom are morpholino or piperidino and each of R_3 and R_4 is alkyl of one to five carbon atoms, allyl or benzyl or R_3 and R_4 taken together with the adjacent nitrogen atom are morpholino, piperidino, 4-benzylpiperazino, 4-p-chlorphenylphenylpiperazine, hexamethylenimino, 4-methylpiperazino, 4-formylpiperazino, pipecolino and pyrrolidino are provided. The novel compounds are produced by a novel process which comprises reacting a compound of the formula:



wherein R_1 and R_2 have the same meaning as defined above is reacted with formaldehyde and a secondary amine of the formula

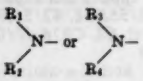
wherein R_3 and R_4 have the same meaning as defined above.

Sydnone Derivatives of the formula

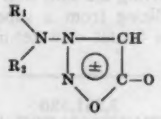


(I)

and pharmaceutically acceptable salts thereof, wherein each of R_1, R_2, R_3 and R_4 is C_1–C_5 alkyl, C_2–C_5 alkenyl or C_7–C_9 aralkyl, or where



is a 5- to 7-membered heterocyclic ring, are analgesics of low toxicity in mammals. They are prepared by reacting the appropriate compound of the formula



with formaldehyde and a secondary amine of the formula

3,591,587

HETEROCYCLIC SUBSTITUTED-CHLORINATED METHANONAPHTHALENE COMPOUNDS

Carleton W. Roberts, Midland, and Gale D. Travis, Shepherd, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 434,709, Feb. 23, 1965. This application Oct. 31, 1968, Ser. No. 772,404
Int. Cl. C07d *87/36*
U.S. Cl. 260—247.2 **3 Claims**

7-substituted 1,2,3,4,9,9 - hexachloro-1,4,4a,5,6,7,8,8a-octahydro-1,4-methanonaphthalene-6,7-dicarboxylic acid derivatives bearing a heterocyclic substituent such as a morpholino, piperidino or pyrrolidinyl on the 7-carbonyl radical are disclosed as novel compounds useful as parasiticides and anthelmintics.

3,591,588

PROCESS FOR THE PREPARATION OF 1-CARBOETHOXYHYDRAZINOPHTHALAZINE HYDROCHLORIDE

Stanislaw Biniecki, Warsaw, and Stanislaw Chachula, Helena Jozwiak, Zbigniew Ludwicki, Stefan Labedzki, and Wiktor Pietrzak, Pabianice, Stanislaw Pieta and Stanislaw Paradowski, Lodz, Poland, and Josef Izdebski, deceased, late of Warsaw, Poland, by Alicja Maria Izdebska and Barbara Anieszka Izdebska, heirs, Warsaw, Poland, assignors to Pabianickie Zaklady Farmaceutyczne "Polfa" Przedsiebiorstwo, Pabianice, Poland

Continuation-in-part of application Ser. No. 406,930, Apr. 28, 1964. This application Oct. 29, 1968, Ser. No. 773,977

Claims priority, application Poland, May 11, 1963, 101,553; Dec. 9, 1963, 103,201

Int. Cl. C07d *51/06*

U.S. Cl. 260—250 3 Claims

Two moles of 1-hydrazinophthalazine and one mole of ethyl chlorocarbonate are reacted to yield one mole of 1-carboethoxyhydrazinophthalazine in an organic solvent (e.g. ethanol). The 1-hydrazinophthalazine hydrochloride produced during the reaction, is filtered, the filtrate is evaporated under reduced pressure to a dry state and the residue is dissolved in hot hydrochloric acid to convert 1-carboethoxyhydrazinophthalazine into the hydrochloride which, after addition of dilute ethanol and cooling, crystallizes in the form of a raw product. This product is filtered and then crystallized from diluted ethanol for its purification. The pharmaceutical compound has been found to exert a slow but persistent hypotensive effect in hypertensive and normotensive animal subjects.

3,591,589

6-DIALKYLAMINOALKOXY - 2-ARYL-4-CHLOROPYRIMIDINES AND 6-DIALKYLAMINOALKYLTHIO-2-ARYL-4-CHLOROPYRIMIDINES

Dong H. Kim and Arthur A. Santilli, Delaware, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 642,142, May 29, 1967. This application Apr. 8, 1969, Ser. No. 814,448

Int. Cl. C07d *51/36*

U.S. Cl. 260—256.4 10 Claims

This disclosure is concerned with 6-dialkylaminoalkoxy-2-aryl-4-chloropyrimidine and 6-dialkylaminoalkylthio-2-aryl-4-chloropyrimidine compounds which are active as antiamoebic agents in vitro.

3,591,590

DIISOCYANATES

Theobald Haug, Frenkendorf, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,856

Claims priority, application Switzerland, Mar. 27, 1969, 4,793/69

Int. Cl. C07d *49/32, 51/30*

U.S. Cl. 260—260 9 Claims

New 1,3-di-(γ-isocyanatopropyl)-hydantoins and -dihyuracils, for example 1,3-di-(γ-isocyanatopropyl)-5,5-dimethylhydantoin or 1,3-di-(γ-isocyanatopropyl)-5,5-dimethyl-5,6-dihydrouracil and their use for the manufacture of polyurethanes by reaction with polyhydroxyl compounds. The new diisocyanates are completely odourless; irritation of the mucus membranes was not detectable; they are therefore preferably used in the lacquer field. The new diisocyanates react significantly more rapidly with primary alcohols than do aliphatic diisocyanates, for example 1,6-hexamethylenediisocyanate, and on the other hand more slowly than aromatic diisocyanates, for example 1,4-toluylenediisocyanate.

3,591,591

BISMUTH SALT OF 6-METHYL-8-HYDROXYQUINOLINE

Eugene Riviere, Issy-les-Moulineaux, Danyele Yvette Vilarel, Chantilly, and Roger Lucien Debrie, Brenouille, France, assignors to Ugine Kuhlmann, Paris, France

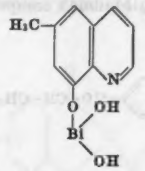
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,206

Claims priority, application France, Dec. 1, 1967, 130,566

Int. Cl. C07d *33/44*

U.S. Cl. 260—270 1 Claim

The compounds of the formula:



The compound is useful for the treatment of diarrhoea.

3,591,592

SYNTHESIS OF DISUBSTITUTED PYRIDINES

Paul S. Anderson, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,407

Int. Cl. C07d *31/20*

U.S. Cl. 260—290 3 Claims

By introducing an alkyl or aryl group into the 2-position of a 4-alkyl or 4-aryl pyridine with an alkyl or aryl lithium reagent 2,4-alkyl and aryl pyridine compounds can be conveniently prepared.

3,591,593

1-PHENYLALKYL-3-BENZOYL-4-HYDROXY-4-PHENYL SUBSTITUTED PIPERIDINES

Kurt Thiele and Walter von Bebenburg, Frankfurt am Main, and Klaus Posselt, Bergen-Enkheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

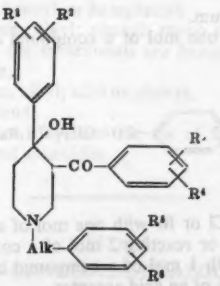
No Drawing. Filed July 9, 1968, Ser. No. 743,297

Claims priority, application Germany, Nov. 2, 1967, D 54,500

Int. Cl. C07d *29/20*

U.S. Cl. 260—294.7D 13 Claims

Substituted piperidines of the formula



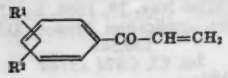
and their acid addition salts and their quaternary ammonium salts and their diastereomers and optically active isomers having pharmaceutical activity for treatment of heart and circulatory conditions and especially for increasing the coronary blood flow partly in combination with an improvement of the heart function wherein:

Alk is a straight or branch chained saturated aliphatic hydrocarbon or hydroxy substituted hydrocarbon chain of 2–4 carbon atoms;

Each of R^1–R^6 is selected from the group consisting of hydrogen, halogen, nitro, hydroxy, lower alkoxy, lower alkyl or lower trifluoroalkyl and each pair of R^1 and R^2,

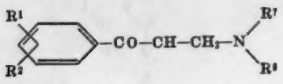
R^3 and R^4 and R^5 and R^6 on the phenyl rings when taken together can be lower alkylene dioxy, which are prepared by

(a) Reacting one mol of a compound of the formula



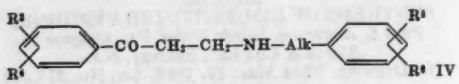
II

or the corresponding Mannich compound of the formula



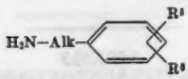
III

wherein R^7 and R^8 are lower alkyl with one mol of a compound of the formula



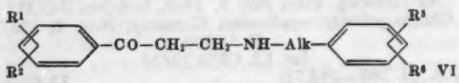
IV

or reacting 2 mol of a compound of the Formula II or the Formula III with one mol of a compound of the formula



V

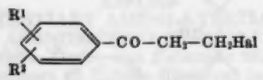
or heating a compound of the formula



VI

in an inert medium.

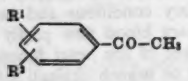
(b) Reacting one mol of a compound of the formula



VII

wherein Hal is Cl or Br with one mol of a compound of the Formula IV or reacting 2 mol of a compound of the Formula VII with 1 mol of a compound of the Formula V in the presence of an acid acceptor.

(c) Reacting 2 mol of a compound of the formula



VIII

with one mol of a compound of the Formula V and formaldehyde or a formaldehyde yielding substance and, if desired, forming the acid addition or quaternary ammonium salts of the compounds produced.

3,591,594

SUBSTITUTED 6,7-DIHYDRO-INDOLE-4-(5H)-ONE

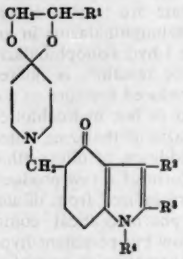
Harvey Byron Hopps and John Hans Biel, Milwaukee, Wis., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.

No Drawing. Filed Oct. 2, 1968, Ser. No. 764,594

Int. Cl. C07d *29/28*

U.S. Cl. 260—294.7 **12 Claims**

Compounds of the formula



wherein R^1, R^2, R^3 and R^4 each represent a member selected from the group consisting of hydrogen, (lower) alkyl, (loweralkenyl, (lower)alkynyl, phenyl and benzyl; and the pharmaceutically acceptable nontoxic salts thereof exhibit tranquilizing and antiemetic activity and are useful as tranquilizers and antiemetic agents in mammals.

3,591,595

CERTAIN 2 - HYDROXYLOWERALKYL-TETRAHYDRO-2-H-INDENO[1,2-c]PYRIDINES AND 2-HYDROXY LOWERALKYL-HEXAHYDRO-2-H-INDENO[1,2-c]PYRIDIN 5-OLS

Anton Ebnother, Arlesheim, and Jean-Michel Bastian, Birsfelden, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

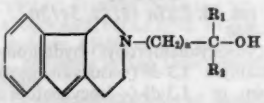
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,306

Claims priority, application Switzerland, Apr. 5, 1968, 5,123/68; Dec. 19, 1968, 18,945/68

Int. Cl. C07d *29/16, 31/28*

U.S. Cl. 260—294.7 **14 Claims**

The invention concerns acid addition salts of indenopyridine derivatives of the formula:



wherein n is an integer of from 1 to 4, and R_1 and R_2 are hydrogen or lower alkyl of 1 to 4 carbon atoms.

The abovementioned acid addition salts exhibit psychotropic properties and more particularly, the compounds are useful antidepressants.

A process for the production of the compounds is furthermore described.

3,591,596

1,2-DIHYDRO - 6 - METHYL-2-OXO-4-PYRIDYL ESTERS OF CERTAIN BENZENE SULFONIC ACIDS AND DERIVATIVES THEREOF

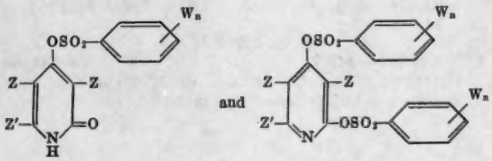
Chun-sang Wang and Thomas W. McGee, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,961

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 3 Claims

The invention relates to halogenated 6-methyl-4-pyridyl and 6-methyl-2,4-pyridinediyl esters of benzenesulfonic acid of the formulae



wherein each Z is hydrogen or X; X is chlorine, bromine or iodine; Z' is $—CH_3$, $—CH_2X$, $—CHX_2$ or $—CX_3$; W is a member selected from the group consisting of halogen, nitro and cyano and *n* is an integer of from 0 to 3, inclusive. The compounds of the invention are particularly useful as fungicides.

3,591,597

VAPOR PHASE PRODUCTION OF MONOCHLOROCYANOPYRIDINES

William H. Taplin III, Lafayette, and Sven H. Ruetman, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,379

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 7 Claims

Monochlorocyanopyridines are prepared by the reaction of chlorine and a monocyanopyridine in a process which comprises introducing a monocyanopyridine, usually carried in a substantially inert diluent, both being in the vapor phase, into a reaction zone and contacting this mixture in a rapid turbulent mixing step with at least two moles of chlorine per mole monocyanopyridine. The reaction zone is maintained at a temperature in the range of from about 275° C. to about 375° C.

3,591,598

CERTAIN CONDENSATION PRODUCTS DERIVED FROM MANNICH BASES

Thornton P. Traise, Chicago Heights, Ill., and Roger W. Watson, Highland, and Randel Q. Little, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Nov. 8, 1968, Ser. No. 774,497

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 5 Claims

This invention concerns the condensation product of an aldehyde reactant having more than one carbon atom and/or ketone reactant, formaldehyde, an alkylene polyamine, and an alkyl-substituted phenol and/or a methyl-substituted amino pyridine. These compositions can be used as ashless alkaline additives for motor oils.

3,591,599

ISOINDOLO[1,2-b]BENZOTHIAZOL-11 (4bH) ONE 5-OXIDES

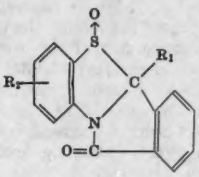
Hans Hoehn, Regensburg, and Ernst Schulze, Burgweinting, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Dec. 31, 1969, Ser. No. 889,683

Int. Cl. C07d *99/06*

U.S. Cl. 260—304 9 Claims

New isoindolo[1,2-b]benzothiazol-11(4bH)one 5-oxides which are anti-inflammatory and analgesic agents have the formula



3,591,600

2-AMINOTHIAZOLE PHOSPHATES AND PHOSPHONATES

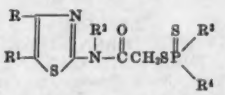
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed July 7, 1969, Ser. No. 839,626

Int. Cl. C07d *11/34*

U.S. Cl. 260—306.8R 12 Claims

Compounds of the formula



in which R is hydrogen; alkyl; naphthyl; phenyl; mono or di substituted phenyl wherein the substituents are halogen, nitro, alkyl; or the group $—CH_2—S—R^5$ in which R^5 is alkyl, phenyl, benzyl, or halophenyl;

R^1 is hydrogen; alkyl; phenyl; mono or di substituted phenyl wherein the substituents are halogen, nitro, alkyl; nitro; or halogen;

R^2 is hydrogen, alkyl; allyl or phenyl;

R^3 is alkoxy, and

R^4 is alkoxy or alkyl and the use of these compounds as insecticides and acaricides.

3,591,601

N-CHLORO OR BROMO-2-OXAZOLIDINONES

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 30, 1967, Ser. No. 679,227

Int. Cl. C07d *85/28*

U.S. Cl. 260—307 4 Claims

The N-chloro and N-bromo derivatives of 2-oxazolidinone, 2-morpholinone, 2-oxazinidinone, and the corresponding hydrocarbon substituted compounds are prepared by halogenation, using a halogenated isocyanuric acid as the halogenating reagent. These N-halo compounds are germicides and bleaching agents.

3,591,602
PYRROLIDINE COMPOUNDS
Ian Moyle Lockhart, Egham, Surrey, England, assignor to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed Mar. 20, 1969, Ser. No. 808,994
Claims priority, application Great Britain, Mar. 25, 1968, 14,356/68
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.3 **13 Claims**

1 - cyclopropylmethyl- and 1-cyclobutylmethyl-3-alkyl-3-(m - hydroxyphenyl)pyrrolidine compounds, salts and esters thereof, and their production by (a) reacting a 1-cycloalkylcarbonyl-3-alkyl-3-(m - hydroxyphenyl)pyrrolidine with a complex metal hydride reducing agent and then hydrolyzing the reaction product, (b) reacting a 1-cycloalkylmethyl-3-alkyl-3-(m - alkoxyphenyl)pyrrolidine with an acidic reagent capable of cleaving the ether linkage, and (c) reacting one of the 1-cycloalkylmethyl-3-alkyl-3-(m-hydroxyphenyl)pyrrolidines or a reactive derivative thereof with a reactive derivative of an acid to produce one of the esters. The compounds of the invention are useful both as chemical intermediates and as pharmacological agents exhibiting analgesic activity.

3,591,603
3(3-INDOLE)-LOWER-ALKYLAMINES
Zinon B. Papanastassiou, Lexington, and John L. Neumeyer, Wayland, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
No Drawing. Filed May 13, 1968, Ser. No. 728,818
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **6 Claims**

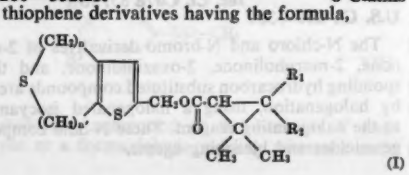
New 3-indoleglyoxamides and (3-indole)-lower-alkylamines having useful C.N.S. depressant activity and prepared, respectively, by reaction of a 3-indoleglyoxalyl halide or a (3-indole)-lower-alkyl halide with an appropriate amine.

3,591,604
DERIVATIVES OF DIBENZOXAZOCINE AND DIBENZTHIAZOCINE
Harry Louis Yale, New Brunswick, Francis Alexander Sowinski, Edison, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 346,407, Feb. 21, 1964, now Patent No. 3,454,598. This application Oct. 1, 1968, Ser. No. 764,320
Int. Cl. A61k *27/00;* **C07d** *87/54, 93/00*
U.S. Cl. 260—327B **3 Claims**

Disclosed herein are derivatives of dibenzoxazocine and dibenzthiazocine which are active as ataractic agents.

3,591,605
THIOPHENE DERIVATIVES
Toshio Mizutani, Hirakata-shi, Nobushige Itaya and Shigeyoshi Kitamura, Minoo-shi, Nobuyuki Kameda, Takarazuka-shi, Yositosi Okuno, Toyonaka-shi, and Keimei Fujimoto, Kyoto, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed May 5, 1969, Ser. No. 821,943
Claims priority, application Japan, May 11, 1968, 43/31,763; June 1, 1968, 43/37,680
Int. Cl. C07d *63/18;* **A01n** *9/12*
U.S. Cl. 260—332.2R **8 Claims**

Novel thiophene derivatives having the formula,

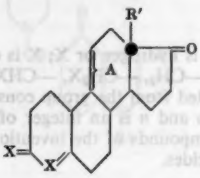


(I)

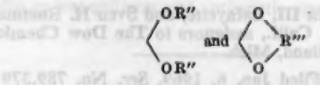
wherein R_1 means hydrogen atom or methyl group, R_2 means methyl, 2-methyl-1-propenyl or phenyl group when R_1 is hydrogen atom, and means methyl group when R_1 is methyl group, and n and n' mean an integer of 1 or 2 (when any one of them is an integer of 2, the other is an integer of 1), which have excellent insecticidal activities.

3,591,606
3,5-DIKETALS OF 4,5 - SECO-GONANE-3,5,17-TRIONES AND PROCESS OF PREPARATION
Julien Warnant, Neuilly-sur-Seine, Jean Jolly, Clichy-sous-Bois, and Robert Joly, Montmorency, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed May 23, 1967, Ser. No. 640,507
Claims priority, application France, May 26, 1966, 63,086; Aug. 30, 1966, 74,629; Sept. 1, 1966, 74,982
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **4 Claims**

The present invention relates to 3,5-diketals of 4,5-seco-gonane-3,5,17-triones of the formula



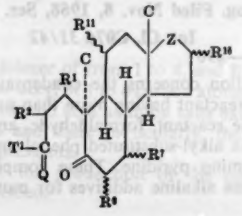
wherein R' represents an alkyl having from 1 to 4 carbon atoms; X represents a member selected from the group consisting of



wherein R'' is lower alkyl and R''' is selected from the group consisting of lower alkylene and substituted lower alkylene; and A is selected from the group consisting of two hydrogens and a double bond. These compounds are useful as intermediates in the total synthesis of steroids, particularly those having substituents on the 17 carbon atom.

3,591,607
RETROSTEROID A-RING FORMATION
Andor Furst, Basel, and Wolfgang Koch, Riehen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Apr. 19, 1966, Ser. No. 543,526
Int. Cl. C07c *171/07;* **C07d** *3/00*
U.S. Cl. 260—343.9 **10 Claims**

3,5-seco-9β,10α steroids of the formula:



wherein:

R^1 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and lower alkylthio;

R^2 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and lower alkylthio;

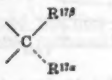
R^6 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio, and halo;

R^7 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio, and halo;

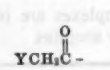
R^{11} is a member selected from the group consisting of hydrogen, hydroxy, and lower alkanoyloxy;

R^{16} is a member selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, and, when the 17β-substituent is acetyl or substituted acetyl, fluorine;

Z is a member selected from the group consisting of carbonyl, (17β-hydroxy-17α-lower alkanoic acid lactone), and



$R^{17\beta}$ is a member selected from the group consisting of hydroxy, lower alkanoyloxy, and



Y is a member selected from the group consisting of hydrogen, halo, and hydroxy;

$R^{17\alpha}$, when $R^{17\beta}$ is hydroxy and lower alkanoyloxy, is a member selected from the group consisting of hydrogen and lower aliphatic hydrocarbyl, and, when $R^{17\beta}$ is

is a member selected from the group consisting of hydrogen, alkyl, hydroxy, lower alkanoyloxy, and halo;

Q, when taken alone, is oxo;

T^1, when taken alone, is a member selected from the group consisting of alkali metal oxy and lower alkoxy; and

T^1 and Q, when taken together, are nitrilo. These compounds are intermediates which can be converted to a known class of endocrinologically active 9, 10-steroids.

3,591,608

MACROCYCLIC KETOLACTONES

Hans U. Immer, Cote St. Luc, Montreal, Quebec, and Jehan F. Bagli, Valois Gardens, Quebec, Canada, assignors to Ayerst, McKenna & Harrison Limited, St. Laurent, Quebec, Canada

No Drawing. Filed Nov. 15, 1968, Ser. No. 776,277
Int. Cl. C07d *7/00*
U.S. Cl. 260—343.2 **8 Claims**

There are disclosed herein the compounds 10-methoxy- and 12-methoxy-3,4,5,6-tetrahydro-8H-2-benzoxecin-1,7-dione, 3,4,5,6,8,9-hexahydro-2-benzoacycloundecene-1,7-dione and its 11-hydroxy and 11-acetoxy derivatives, and 3,4,5,6,9,10 - hexahydro-12-methoxy-8H-2-benzoxacyclododecane-1,7-dione, as well as its 2-methyl derivative. The intermediates used to prepare the above compounds are also disclosed, viz., 2(4'-hydroxybutyl)-5-methoxy-and-7-methoxy - indan - 1-one, 3,4-dihydro-2(4'-hydroxybutyl)-2H-naphthalene-1-one, and its 6-hydroxy, 6-acetoxy, and -6 methoxy derivatives, 2-(4'-hydroxybutyl)-, 2-(pent-4'-enyl)-, and 2-(4'-hydroxypentyl)-7-methoxy-2,3,4,5-tetrahydro - 1H - benzocyclohepten-1-one, 8-methoxy- and 10-methoxy - 2,3,4,5 - tetrahydro-6H-indeno-[1,2-b]oxepin, 2,3,4,5,6,7-hexahydronaphth[1,2-b]oxepin and its 9-acetoxy derivative and 2,3,4,5,7,8-hexahydro-10-methoxy-6H-benzocyclohepten[1,2-b]oxepin and its 2-methyl derivative.

3,591,609

SYNTHESIS OF 2-FURYL THIOETHERS

R. A. Silverman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 1, 1968, Ser. No. 764,331
Int. Cl. C07d *5/10*
U.S. Cl. 260—347.2 **12 Claims**

A one step process of preparing a 2-furyl thioether which comprises reacting an aliphatic or aromatic mono or dithiol with a 2,5-diloweracyloxy-2,5-dihydrofuran; 2,5-dihydro - 2,5 - diloweralkoxyfuran; 2,5-dihydro - 2,5 - diloweralkoxy-2-methyl furan, or fumaric dialdehyde. Certain 2-furyl thioethers are novel compounds. Compounds prepared according to the described one step process are useful as silver complexing agents in photographic compositions.

3,591,610

ANTHRAQUINONE DYES

Hirohito Kenmochi, Toyonaka-shi, Tatsuo Kanda, Takarazuka-shi, Seiji Hotta, Minoo-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Aug. 14, 1967, Ser. No. 660,239
Claims priority, application Japan, Aug. 18, 1966, 41/54,615, 41/54,616; Aug. 27, 1966, 41/56,563
Int. Cl. C09b *1/40, 1/52*
U.S. Cl. 260—372 **2 Claims**

The novel dyes of the class of reactive anthraquinone dyes and employable for dyeing fiber articles containing nitrogen atom in clear shade with fastnesses.

3,591,611

3-OXYGENATED-17-UREIDO-ANDROSTANES AND PROCESS

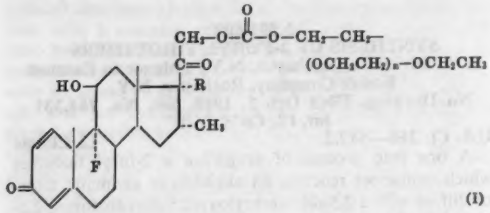
Glen E. Arth, Cranford, Lewis H. Sarett, Princeton, and Arthur A. Patchett, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,462
Int. Cl. C07c *169/14*
U.S. Cl. 260—397.3 **14 Claims**

The invention disclosed herein relates to novel steroid compounds and processes for preparing them. More particularly, it relates to 3-oxygenated-17-ureido steroids of the androstane series which are effective as androgen biosynthesis inhibitors. These 3-oxygenated-17 - ureido androstanes are prepared starting with a 3-oxygenated-5-pregnene-20-one compound, e.g. pregnenolone acetate, as follows: the 3 - oxygenated - 5 - pregnene-20-one compound is reacted with hydroxylamine to form the 20-oxime which is then reacted with phosphorous oxychloride thereby forming the corresponding 3 - oxygenated - 17 - acetamido-androst-5-ene compound; the latter compound is then hydrolyzed to form the corresponding 17-amino compound which, upon reaction with potassium cyanate, is converted to the corresponding 3 - oxygenated - 17-ureido-androst - 5 - ene compound. Where pregnenolone acetate per se is used as starting material, the compound obtained is 3 - hydroxy - 17 - ureido-androst-5-ene which is then oxidized to produce 17 - ureido-androst-4-ene-3-one.

3,591,612
NOVEL CARBONATES
André Allais, Les Lilas, France, assignor to Roussel-UCLAF, Paris, France
No Drawing. Filed Apr. 15, 1969, Ser. No. 816,386
Claims priority, application France, Apr. 22, 1968, 148,895
Int. Cl. C07c 169/32
U.S. Cl. 260—397.45 5 Claims

Mixed carbonates of 9α-fluoro-16α-methyl-17α-R-$\Delta^{1,4}$-pregnadiene-11β-21-diol-3,20-dione of the formula



(I)

wherein *n* is an integer from 0 to 10 and R is selected from the group consisting of hydrogen and hydroxyl having anti-inflammatory activity and their preparation.

3,591,613
CYCLOPENTANEDICARBOXYLIC ACID DERIVATIVES
Bozidar Palameta, St. Laurent, Quebec, Canada, assignor to Ayerst, McKenna & Harrison, Limited, St. Laurent, Quebec, Canada
No Drawing. Filed Jan. 7, 1969, Ser. No. 789,617
Int. Cl. C08h 17/36
U.S. Cl. 260—413 5 Claims

There are disclosed herein 4-(8-carboxyoctanoyl)-5-heptanoyl-, 4-(8-carboxy-1-hydroxyoctyl)-5-(1-hydroxyheptyl)-, and 4-(8-carboxyoctyl)-5-heptyl-1,3-cyclopentanedicarboxylic acids, lower diacylates of the above dihydroxy acid, and intermediates used in the preparation of the above compounds. The compounds inhibit aldose reductase and are useful for the treatment of galactosemic cataracts. Processes for their preparation and methods for their use are also disclosed.

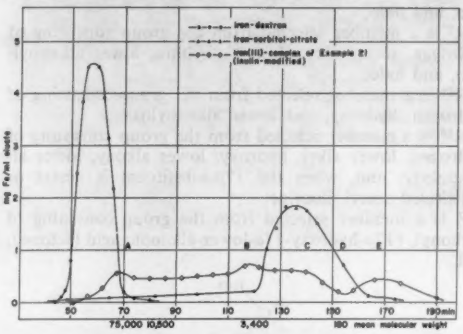
3,591,614
SUBSTITUTED ETHYL DERIVATIVES OF TRICYCLOHEXYLTIN
Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 20, 1968, Ser. No. 761,310
Int. Cl. A01n 9/20, 9/24; C07f 7/22
U.S. Cl. 260—429.7 4 Claims

Substituted ethyl derivatives of tricyclohexyltin, wherein the substituted ethyl group is selected from 2-carboxyethyl, 2-cyanoethyl or 2-carb(lower)alkoxyethyl, said derivative being useful as pesticides.

3,591,615
CHLOROPHENYL THIOTRICYCLOHEXYLTIN COMPOUNDS
Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 20, 1968, Ser. No. 761,312
Int. Cl. A01n 9/00; C07f 7/22
U.S. Cl. 260—429.7 1 Claim

Novel tricyclohexyltin thio-ethers, i.e. phenylthiotricyclohexyltin and chlorophenylthiotricyclohexyltin which are useful as pesticides.

3,591,616
ORGANIC COMPLEX FERRIC COMPOUNDS
Rudolf Baldt, Innsbruck, Austria, assignor to Pharmazeutische Fabrik Montavit Gesellschaft mit beschrankter Haftung, Absam, Tirol, Austria
Filed June 28, 1968, Ser. No. 741,016
Claims priority, application Austria, July 4, 1967, A 6,220/67
Int. Cl. A61k 27/00; C07c 17/18; C07f 15/02
U.S. Cl. 260—439R 6 Claims



The invention relates to iron (III)-glycerin-hydroxycarboxylic acid complexes and inulin-modified variations thereof. Processes for the production of the said complexes are also described.

The iron (III) complexes are indicated for the treatment of iron deficiency anemias.

3,591,617
PURIFICATION OF TOLUENE DIISOCYANATE
Norbert N. Buchsbaum, Clifton, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Filed Mar. 7, 1968, Ser. No. 711,321
Int. Cl. C07c 119/04
U.S. Cl. 260—453 1 Claim

A process for purifying a crude organic isocyanate, such as toluene diisocyanate, wherein the crude isocyanate is dissolved in a suitable solvent and the solution cooled to a temperature at which a portion of the isocyanate crystallizes. The crystals are separated from the mother liquor and a portion of the mother liquor is recycled to the crude isocyanate stream while the remaining portion is purged from the system. The crystals are then dissolved in a mixture of fresh solvent and mother liquor recycled from a subsequent stage. The number of stages employed depends on the desired purity of the final product. The temperature employed in each crystallization stage is higher than in the previous crystallization, thereby providing a mother liquor richer in isocyanate than the preceding stage. The isocyanate crystals from the last stage are recovered as final product.

3,591,618
PROCESS FOR THE PREPARATION OF m- AND p-CYANO BENZYLAMINE AND THE HEXAHYDRO-DERIVATIVES THEREOF
Ernst Hanschke, Burghausen (Salzach), Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 29, 1968, Ser. No. 756,326
Claims priority, application Germany, Sept. 29, 1967, F 53,620
Int. Cl. C07c 121/46, 121/52
U.S. Cl. 260—464 2 Claims

m- and p-Cyano benzylamine and the hexahydro-derivatives thereof are obtained in excellent yield and purity by catalytic hydrogenation of the corresponding dinitrile in the presence of ammonia and of a (further) solvent

when using the amount of hydrogen calculated for one nitrilo group.

3,591,619

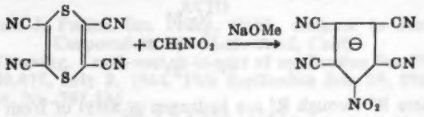
PREPARATION OF NITROTETRACYANOCYCLOPENTADIENIDE SALTS BY REACTION OF TETRACYANODITHIIN, TETRACYANOTHIOPHENE OR DICHLOROFUMARONITRILE WITH NITROMETHANE

Owen W. Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

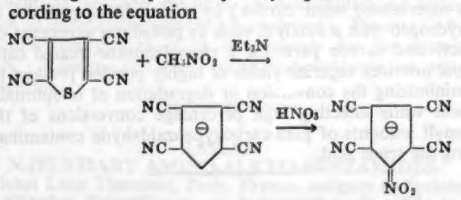
No Drawing. Filed Nov. 21, 1968, Ser. No. 777,887
Int. Cl. C07c *121/48*
U.S. Cl. 260—464 6 Claims

Described and claimed are the processes for preparing nitrotetracyanocyclopentadienide salts which comprise

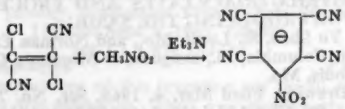
(1) the base-catalyzed reaction of nitromethane with tetracyanodithiin according to the equation



(2) the base-catalyzed reaction of nitromethane with tetracyanothiophene followed by nitration of the resulting mercaptotetracyanocyclopentadienide according to the equation



(3) the base-catalyzed reaction of nitromethane with dichlorofumaronitrile according to the equation



Nitrotetracyanocyclopentadienide salts are useful in the preparation of the diazotetracyanocyclopentadiene dyes.

3,591,620

PROCESS FOR PRODUCING ACRYLONITRILE

Takachika Yoshino, Yokohama, Shigeru Saito, Fuchu-shi, Yutaka Sasaki, Yokohama, and Kiyoshi Moriya, Kanagawa-ken, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1968, Ser. No. 777,103
Claims priority, application Japan, Nov. 28, 1967, 42/75,891
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 5 Claims

This invention provides an improved process for the production of acrylonitrile which comprises contacting a mixture of propylene, molecular oxygen and ammonia in the vapor phase at an elevated temperature with a catalyst having the empirical formula:

$$Fe_{10}Sb_{5-80}V_{0.01-2}X_{0-2}O_{22-186}$$

wherein X represents P or B.

The catalyst mentioned above is distinguished over the promoted or unpromoted iron oxide-antimony oxide catalyst disclosed in the prior art, in the following respects:

(1) It comprises a base catalyst system having a specific atomic ratio of Fe/Sb and a particular promoter being present in an extremely small amount, (2) it exhibits an improved conversion of propylene to acrylonitrile, particularly in the case where high conversion is achieved and the amount of residual oxygen is very small.

For example, the catalysts according to this invention (E–1, E–4 and E–6), and the catalysts disclosed in the prior art (R–1, R–2 and R–4) are prepared by similar procedures, and the activities thereof are tested by the same method to obtain results as shown in the following table.

Catalyst No.	Catalyst composition Fe	Sb	V	X P	X B	O	Carrier, $(SiO_2)_n$	Optimum reaction temp., ° C.	Conversion of propylene to acrylonitrile, percent
E–1	10	25	0.1	0.5		67	30	460	73
E–4	10	25	0.2		0.5	66	30	460	72
E–6	10	60	0.5	0.2		137	60	460	72
R–1	10	25				65	30	420	65
R–2	10	60				135	60	450	66
R–4	10	25	3.0			73	30	410	48

3,591,621

METHOD FOR FORMING NITRILE COMPOUNDS

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 15, 1965, Ser. No. 507,700
Int. Cl. C07c *121/02, 121/08, 121/40*
U.S. Cl. 260—465.4 5 Claims

Multifunctional compounds are prepared by reacting certain nucleophiles such as sodium cyanide, certain olefinically or acetylenically unsaturated compounds such as acrylonitrile, and an alkylating agent such as ethylchloroacetate in the presence of a dipolar aprotic solvent such as dimethylformamide.

3,591,622

AMALGAM HYDRODIMERISATION OF ORGANIC COMPOUNDS

Brian John Woodhall, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 31, 1968, Ser. No. 701,837
Claims priority, application Great Britain, Feb. 7, 1967, 5,842/67
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 6 Claims

α,β-Olefinically unsaturated nitriles or esters (for example acrylonitrile) are converted to their hydrodimers (for example adiponitrile) by reductive dimerisation employing an "onium" amalgam, for example a quaternary ammonium amalgam.

3,591,623
NITROPHENYLACETIC ACID DERIVATIVES
Gayle E. Back, Olathe, and Norman A. Dahle, Mission, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Original application Jan. 23, 1967, Ser. No. 610,746, now Patent No. 3,547,619, dated Dec. 15, 1970. Divided and this application July 31, 1969, Ser. No. 870,702
Int. Cl. C07c *83/08, 101/44*
U.S. Cl. 260—471R 2 Claims

Weeds are combated by herbicidally effective amounts of isomeric nitrophenylacetic acids and with pre-emergent control, in particular, obtained by use of 2-nitrophenylacetic acid and amides and esters thereof.

3,591,624
4-(SUBSTITUTED ARYL) CYCLOHEXENE-CARBOXYLIC ACIDS
George Karmas, Bound Brook, N.J., and Alexander Mebane, New York, N.Y., assignors to Ortho Pharmaceutical Corporation
No Drawing. Filed Aug. 22, 1967, Ser. No. 662,310
Int. Cl. C07c *69/76;* A61k *27/00*
U.S. Cl. 260—473 2 Claims

4-(substituted aryl) cyclohexenecarboxylic acids, wherein the substituted aryl portion of the molecule is p-cyclopentoxyphenyl and o-tolyl, are useful as agents for the suppression of animal reproduction.

3,591,625
ESTERIFICATION OF TEREPHTHALIC ACID WITH AN ALKYLENE GLYCOL IN THE PRESENCE OF UREA OR AN ALKYL UREA
Ian C. Twilley and Stanley D. Lazarus, Petersburg, Va., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed June 17, 1968, Ser. No. 737,311
Int. Cl. C07c *69/82*
U.S. Cl. 260—475PR 13 Claims

A process for the direct esterification of terephthalic acid with an alkylene glycol which comprises esterifying terephthalic acid with an alkylene glycol containing 2 to about 10 carbon atoms per molecule under direct esterification conditions in the presence of an amount of urea or an alkyl urea sufficient to suppress the formation of aliphatic ether groups.

3,591,626
TETRAVINYL COMPOUNDS
Elihu J. Aronoff, Framingham, and Santokh S. Labana, Dearborn Heights, Mass., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 4, 1969, Ser. No. 847,241
Int. Cl. C07c *69/54*
U.S. Cl. 260—486R 6 Claims

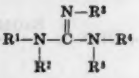
A tetravinyl compound having utility in coating compositions and other polymer-forming operations is formed by first reacting a diepoxide with acrylic and/or methacrylic acid and subsequently reacting the resultant ester condensation product with a vinyl unsaturated acyl halide.

3,591,627
OIL-SOLUBLE SULFONATE PREPARATION WITH NOVEL SEPARATION STEP
Ulric B. Bray, Los Angeles, and Lemuel S. Benbury, Whittier, Calif., assignors to Bray Oil Company, Los Angeles, Calif.
No Drawing. Filed July 7, 1967, Ser. No. 651,695
Int. Cl. C07c *143/24*
U.S. Cl. 260—505S 9 Claims

Oil soluble sulfonates suitable for lubricating oil additives etc. are made substantially free of corrosive sulfates by controlled addition of water to alkyl benzene sulfonic acids in solution in a hydrocarbon solvent, thereby separating a major part of the associated sulfuric acid, then neutralizing with excess powdered metal oxide, hydroxide or carbonate and filtering to remove the excess solids on which are adsorbed remaining sulfates.

3,591,628
CARBOXYLATION PROCESS
Edwin L. Patmore, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Dec. 18, 1968, Ser. No. 784,945
Int. Cl. C07c *51/14*
U.S. Cl. 260—515 4 Claims

A method of carboxylating indene, cyclopentadiene, fluorene and hydrocarbyl cyanide by contacting said compounds with carbon dioxide under substantially anhydrous conditions in the presence of a guanidine of the formula:



where R^1 through R^5 are hydrogen or alkyl of from 1 to 5 carbons and acidifying the resultant reaction mixture to form the carboxylic acid derivative and recovering said derivative therefrom.

3,591,629
CATALYST SELECTIVITY IN PURIFYING TEREPHTHALIC ACID
Arnold F. Stancell, Highland, and Raymond J. McGowan, Wayne, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Aug. 19, 1968, Ser. No. 753,772
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 15 Claims

The sorption of a phenylbenzene, as exemplified by biphenyl and 1,3-terphenyl, by a Group VIII metal catalyst alters the selectivity of the catalyst for promoting various reactions. In the purification of crude terephthalic acid in dispersed form (e.g., vaporized at elevated temperature in a superheated steam carrier) by contact in the presence of hydrogen with a catalyst, such as palladium supported on activated carbon particles, a phenylbenzene-treated catalyst provides superior yields of highly purified product by minimizing the conversion or degradation of terephthalic acid while effecting high percentage conversions of the small amounts of para-carboxybenzaldehyde contaminating the crude acid.

3,591,630
CAKING-RESISTANT GRANULAR SODIUM NITRILOTRIACETATES AND PROCESSES FOR PRODUCING THE SAME
Chung Yu Shen, St. Louis, Mo., and Norman Earl Stahlheber, Columbia, Ill., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,876
Int. Cl. C11d *1/10, 1/66;* C07c *101/20*
U.S. Cl. 260—534E 5 Claims

Caking-resistant granular sodium nitrilotriacetate is prepared by forming a reaction mixture of nitrilotriacetic acid and trisodium nitrilotriacetate and water; the molar ratio of nitrilotriacetic acid to trisodium nitrilotriacetate being from about 1:2 to about 1:10, said water comprising from about 15 to about 25% by weight based upon the weight of the total reaction medium and drying the resulting mixture to obtain a detergent additive containing disodium nitrilotriacetate and trisodium nitrilotriacetate and having a bulk density of from about 0.4 to about 0.8 g./cc. and having about 60% of its particles smaller than the openings in a U.S. Standard 10 mesh screen and about 80% larger than the openings in a U.S. Standard 60 mesh screen and less than about 8% by weight of water.

3,591,631
NOVEL PROCESS FOR THE PREPARATION OF UREA-N,N'-DICARBOXYLIC ACIDS
Jörg Strickrodt, Hannover, and Gerhard Blume and Hans Scheck, Wolfenbuttel, Germany, assignors to Salzgitter Chemie GmbH, Hannover, Germany
No Drawing. Filed Apr. 10, 1968, Ser. No. 720,361
Claims priority, application Germany, Apr. 11, 1967, S 109,278
Int. Cl. C07c *99/06, 127/16*
U.S. Cl. 260—534 **5 Claims**

A process for the preparation of urea-N,N'-dicarboxylic acids from (1) amino-carboxylic acids, their salts or the corresponding lactams and (2) carbonyl sulfide.

3,591,632
METHOD FOR RECOVERING TRANS-TRAUMATIC ACID
August J. Pacini, San Pedro, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
No Drawing. Continuation-in-part of application Ser. No. 380,071, July 2, 1964. This application Jan. 29, 1968, Ser. No. 701,136
Int. Cl. C07c *51/42*
U.S. Cl. 260—537 **2 Claims**

Essentially pure trans-traumatic acid is obtained from a mixture of cis- and trans-isomers by twice recrystallizing the acid from acetonitrile solution.

3,591,633
NOVEL PROCESS
Henri Ulrich, North Branford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Sept. 17, 1968, Ser. No. 760,355
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 **3 Claims**

The chlorination of N,N'-diphenylurea to give bis(2,4,6-trichlorophenyl)urea is effected in high yield and with facile separation of product, by employing an inert aprotic solvent as reaction medium (N,N-dialkylalkanoamides such as dimethylformamide are preferred). The bis(2,4,6-trichlorophenyl)urea is an intermediate for the known N,N' - dichloro - bis(2,4,6 - trichlorophenyl)urea, an antivessicant.

3,591,634
N-(TERTIARY AMINO-ALKYL)-BENZAMIDES
Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ille-de-France, Paris, France
No Drawing. Filed June 19, 1968, Ser. No. 738,123
Claims priority, application France, June 20, 1967, 111,225; Sept. 5, 1967, 120,026
Int. Cl. C07c *103/33*
U.S. Cl. 260—559 **4 Claims**

The compositions of this invention are useful as local anesthetics for mammals. They are significantly more potent than cocaine, xylocaine and procaine. They may be administered in the form of tablets, ampoules or aerosols.

3,591,635
CATALYTIC HYDROGENATION PROCESS FOR PREPARING DI(4 - AMINOCYCLOHEXYL) METHANE
William J. Farrissey, Jr., North Branford, and Floro F. Frulla, Wallingford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Sept. 25, 1968, Ser. No. 762,661
Int. Cl. C07c *85/00*
U.S. Cl. 260—563B **12 Claims**

A process is disclosed for the catalytic hydrogenation of di(4-aminophenyl)methane to di(4-aminocyclohexyl) methane. The novelty resides in use of a supported rhodium catalyst (rhodium-on-alumina preferred) with a rhodium content of about 1% to about 20% by weight. High yields of di(4-aminocyclohexyl)methane, free from aromatic contaminants, are obtained. The catalyst can be recycled many times without exhaustion.

3,591,636
SUBSTITUTED BENZYLIDENEAMINO GUANIDINES
William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 743,613, July 10, 1968. This application Sept. 16, 1968, Ser. No. 762,356
Int. Cl. C07c *133/10*
U.S. Cl. 260—564 **7 Claims**

Substituted benzylideneamino-3-hydroxy guanidines, e.g., 1-(2,6-dichlorobenzylideneamino)-3-hydroxyguanidine, are useful as hypotensives and agrochemicals.

3,591,637
BIS[(DIALKYLAMINOMETHYL)HYDROXY-BENZYL]SULFIDES
Francis X. O'Shea, Naugatuck, Conn., and Gordon P. Sage, Charleston, W. Va., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,968
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 **6 Claims**

This invention is concerned with a new series of compounds found to be useful as antioxidants, and their novel method of production. The compounds, described as (dialkylaminomethyl) hydroxy benzyl sulfides are particularly effective in retarding oxidative deterioration.

3,591,638
PROCESS FOR N-METHYLATING NITROANILINES AND COMPOUNDS PREPARED THEREBY
Alexander Halasz, Norwalk, Conn., assignor to Clairol Incorporated, New York, N.Y.
No Drawing. Filed May 13, 1968, Ser. No. 728,786
Int. Cl. C07c *9/44, 85/10, 87/52*
U.S. Cl. 260—574 **12 Claims**

N-methylating nitroanilines by reacting nitroanilines with a mixture containing formaldehyde or paraformaldehyde and sulfuric acid; compounds prepared by this process being useful as hair dyes.

3,591,639
PREPARATION OF AMINES FROM N-SUBSTITUTED AMIDES
Harlan E. Tiefenthal, Western Springs, and Eugene J. Miller, Jr., Wheaton, Ill., assignors to Armour Industrial Chemical Company
No Drawing. Filed Nov. 2, 1967, Ser. No. 680,036
Int. Cl. C07c *85/12*
U.S. Cl. 260—583 **12 Claims**

A process for preparation of primary and secondary amines comprising reacting an N-substituted amide with ammonia at an elevated temperature forming an amine and unsubstituted amide which in the presence of a catalyst dehydrates the unsubstituted amide to a nitrile. The amines formed by this reaction are useful as mineral flotation agents, biocides, and as intermediates to form surface active chemicals and nitrogen derivative compounds such as diamines, quaternary ammonium compounds and the like.

3,591,640
PROCESS FOR THE PRODUCTION OF ETHYLENIC COMPOUNDS

Duncan Clark and Percy Hayden, Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 483,860, Aug. 30, 1965. This application July 29, 1968, Ser. No. 748,218

Int. Cl. C07c *41/06, 41/10, 43/00*

U.S. Cl. 260—614 **15 Claims**

Unsaturated ethers are produced with reduced by-product acetal formation by reacting a vinyl or allyl alkanoate with an alkanol at −50 to 200° C. in a solution containing not more than 10% water, a palladium salt or complex palladium compound and a stationary concentration of the acetal formed as by-products in the process.

3,591,641
PRODUCTION OF DIALKYL ETHERS OF POLYALKYLENE GLYCOLS

Jameil Ameen and Charlie A. Horner, Jr., Hopewell, and Floyd A. Harrison, Colonial Heights, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,326

Int. Cl. C07c *41/04*

U.S. Cl. 260—615 **6 Claims**

In the production of dialkyl ethers of polyalkylene glycols by forming the sodium alcoholate of the monoalkyl ether and reacting the sodium alcoholate with an alkyl chloride, incorporation of a small amount of water in the reaction medium facilitates separation of the sodium chloride by-product. The need for a sodium dispersing agent such as toluene is avoided by the incorporation of water.

3,591,642
ADAMANTANE COMPOUNDS

Stephen S. Szinai, Wokingham, England, and William H. W. Lunn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 13, 1967, Ser. No. 675,037

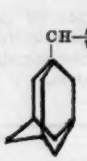
Claims priority, application Great Britain, Oct. 24, 1966, 47,666/66

Int. Cl. C07c *35/22, 69/16;* **A61k** *25/00*

U.S. Cl. 260—617 **3 Claims**

The present invention is directed to adamantane compounds of the formulae:

I



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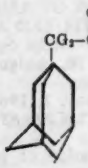

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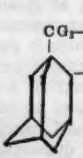

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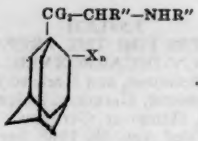

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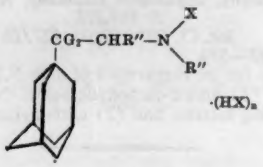

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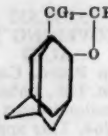
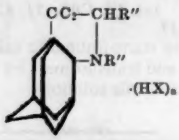
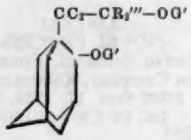


VII



VIII



wherein each G independently represents hydrogen or straight-chain alkyl of from 1 to 6, both inclusive, carbon atoms; G′ represents hydrogen or acetyl; R represents hydrogen or alkyl of from 1 to 6, both inclusive, carbon atoms; R′ represents halo, alkoxy containing from 1 to 6, both inclusive, carbon atoms in the alkyl group, hydrogen or alkyl of from 1 to 6, both inclusive, carbon atoms; each R″ independently represents hydrogen or alkyl of from 1 to 6, both inclusive, carbon atoms; each R‴ indepently represents hydrogen or alkyl of from 1 to 6, both inclusive, carbon atoms, or both R‴ groups taken together represent oxo(=O); X represents halo; and each *n* independently represents an integer of from 0 to 1, both inclusive. The terms "halo" and "halide" are employed herein to designate occurrences of bromine, chlorine, and iodine.

3,591,643
PROCESS FOR THE PREPARATION OF BICYCLO HEXANE COMPOUNDS AND THE NOVEL COMPOUND DEMETHYL-CIS-SABINENE HYDRATE

Wayne Irwin Fanta and William Francis Erman, Springfield Township, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Feb. 28, 1968, Ser. No. 708,780

Int. Cl. C07c *35/22;* **C11b** *9/00;* **A23l** *1/26*

U.S. Cl. 260—617F **2 Claims**

Novel process for the preparation of demethyl-cis-sabinene hydrate comprising the steps of (1) cyclizing 2-methyl-3,6-heptane-dione with a base in a suitable solvent to form 3-isopropyl-2-cyclopentenone; (2) reducing the 3-isopropyl-2-cyclopentenone with a suitable reducing agent to obtain 3-isopropyl-2-cyclopentenol; and (3) reacting the 3-isopropyl-2-cyclopentenol with appropriate reagents

to form the novel compound demethyl-cis-sabinene hydrate. Sabina ketone, sabinene and cis- and trans-sabinene hydrates can readily be prepared from the demethyl-cis-sabinene hydrate, if desired.

3,591,644
PROCESS FOR PREPARING HALOGENATED AROMATICS

Vincent A. Notaro, Monroeville, and Charles M. Selwitz, Pitcairn, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 20, 1968, Ser. No. 730,646
Int. Cl. C07c *25/04*
U.S. Cl. 260—650 **14 Claims**

A process for preparing a nuclear chloro or nuclear bromo aromatic compound which involves heating an aromatic compound in the presence of a nitrate ion, a nitrite, ion, NO or NO_2, a chloride or bromoide ion, water and oxygen.

3,591,645
PROCESS FOR PREPARING A HALOGENATED AROMATIC

Charles M. Selwitz, Pitcairn, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 602,469, Dec. 19, 1966. This application May 20, 1968, Ser. No. 730,589
Int. Cl. C07c *25/04*
U.S. Cl. 260—650 **38 Claims**

A process for preparing a nuclear chloro or nuclear bromo aromatic hydrocarbon which involves heating an aromatic compound with a compound selected from the group consisting of copper, manganese, cerium, cobalt, vanadium, chromium, iron, nickel, cadmium, tin, antimony, mercury, bismuth, the noble metals (platinum, palladium, iridium, rhodium, osmium and ruthenium) and compounds of these metals, a nitrate ion, a nitrite ion, NO or NO_2, a chloride or bromide ion and an inert solvent.

3,591,646
PROCESS FOR OBTAINING HALOGENATED, FLUORINE CONTAINING ORGANIC COMPOUNDS

Martino Vecchio, Milan, Italo Cammarata, Bollate, and Vittorio Fattore, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 329,361, Dec. 10, 1963. This application Dec. 18, 1967, Ser. No. 691,214
Claims priority, application Italy, Dec. 28, 1962, 25,491/62
The portion of the term of the patent subsequent to Nov. 17, 1987, has been disclaimed
Int. Cl. C07c *17/08*
U.S. Cl. 260—653.6 **6 Claims**

Continuous process for the preparation of chlorofluoroethanes by catalytic reaction in gaseous phase of acetylene, hydrogen fluoride and chlorine carried out in the presence of a recycle mixture of halogenated hydrocarbons at a temperature in the range from 250 to 500° C.

3,591,647
PROCESS FOR ISOMERIZING 5-ALKENYLNORBORNENE

Hiromi Kochi, Yoshiaki Komori, and Shigeaki Muto, Hitachi-shi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,939
Claims priority, application Japan, Apr. 30, 1969, 44/33,443
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 **3 Claims**

5-alkenylnorbornene is isomerized to 5-alkylidene norbornene by allowing the 5-alkenylnorbornene to come in contact with a basic catalyst consisting of an alkali metal hydride and a dimethylsulfoxide or an aliphatic amine. The 5-alkenylnorbornene is utilized as the third component for ethylenepropylene rubber.

3,591,648
POLYCYCLIC POLYENE COMPOUNDS OBTAINED BY REACTING FULVENE DERIVATIVES AND DIENES, AND A METHOD OF PRODUCING SAME

Walter Marconi, Sebastiano Cesca, and Arnaldo Roggero, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,917
Claims priority, application Italy, Mar. 13, 1967, 13,637/67
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 **15 Claims**

A process for the manufacture of orthocondensed polycyclic polyene condensation products which comprises condensing a conjugated diene compound and a fulvene derivative at a temperature between 100 to 250° C., the mole-ratio of diene/fulvene being at least one is disclosed.

3,591,649
CONVERSION CATALYST

Wolfram R. Kroll, Linden, and George W. Dembinski, West Orange, N.J., assignors to Esso Research and Engineering Company

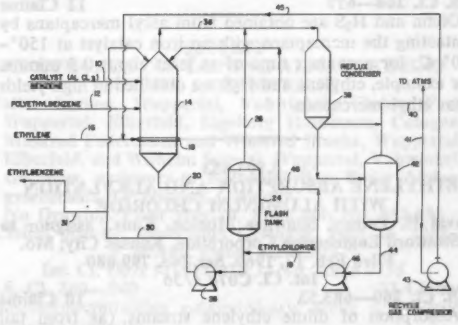
No Drawing. Filed Oct. 10, 1968, Ser. No. 766,651
Int. Cl. C07c *5/10*; B01j *11/22*
U.S. Cl. 260—667 **22 Claims**

An activated conversion catalyst may be prepared by a unique processing sequence. In this sequence a conventional supported transition metal catalyst is brought to substantially improved levels of activity by impregnation with a reduced transition metal catalyst, capable of activating molecular hydrogen.

3,591,650
ALKYLATION PROCESS

Dimitri M. Mitsak, Edgeworth, Sewickley, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed June 12, 1969, Ser. No. 832,653
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 **8 Claims**



An improved process for the alkylation of aromatic hydrocarbons in which product effluent from an alkylation reaction is flash distilled to recover unreacted aromatic and the recovered aromatic is combined with hydrogen chloride gas produced in the alkylation reaction. The combined vapors are cooled to condense the aromatic and dis-

solve the hydrogen chloride gas in the condensed aromatic, and the enriched condensate is thereafter returned to the alkylation reaction.

3,591,651

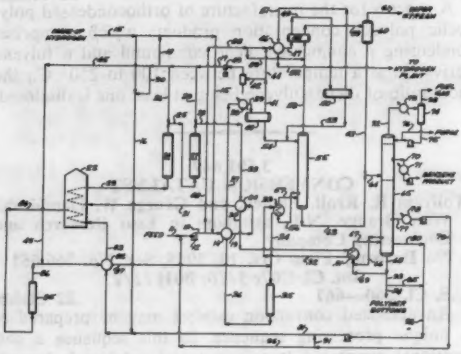
COMBINATION THERMAL HYDRODEALKYLATION DIPHENYL HYDROGENATION PROCESS

Norman L. Carr, Allison Park, and Sheldon J. Kramer and Donald L. Stahlfeld, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 596,125, Nov. 22, 1966. This application Mar. 14, 1969, Ser. No. 816,145

Int. Cl. C07c *3/58, 15/00*

U.S. Cl. 260—672 9 Claims



In a process for the thermal hydrodealkylation of alkyl aromatic compounds, wherein polyphenyl reactants are subjected to conversion to benzene in an auxiliary reaction zone, hydrogenation of the effluents of the primary and auxiliary reaction zones results in prolonged coke-free operation.

3,591,652

CONVERSION OF MERCAPTAN TO OLEFIN AND H_2S

Arthur Lee Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Aug. 26, 1968, Ser. No. 755,434

Int. Cl. C07c *11/02*

U.S. Cl. 260—677 12 Claims

Olefin and H_2S are obtained from alkyl mercaptans by contacting the mercaptans with an iron catalyst at 150°–500° C. for a contact time of at least about 0.5 minute. For example, ethylene and H_2S are obtained in high yields from ethyl mercaptan.

3,591,653

ETHYLENE ABSORPTION AND ALKYLATION WITH ALUMINUM CHLORIDE

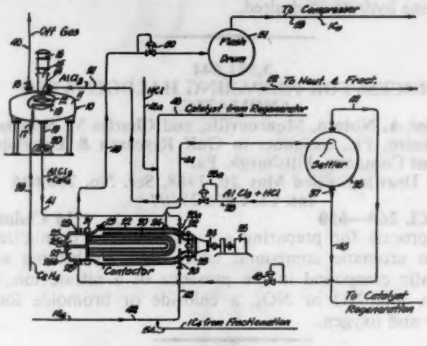
David H. Putney, Shawnee Mission, Kans., assignor to Stratford Engineering Corporation, Kansas City, Mo.

Filed Feb. 17, 1969, Ser. No. 799,680

Int. Cl. C07c *3/56*

U.S. Cl. 260—683.53 10 Claims

Absorption of dilute ethylene streams (as from tail gas) with aluminum chloride complex catalyst in a separate absorption vesel, such as a flash vaporization reactor; alkylation of isobutane in a second reactor vessel such as a circulating pressurized mixer or contactor with the ethylene-aluminum chloride complex absorption product; separation of the reaction effluent from the second reactor with recycle of the relatively heavier catalyst phase to catalyst regeneration or directly to the ethylene absorption step and passage of the relatively light settler phase



optionally through effluent refrigeration of the alkylation step before passage to neutralization and fractionation.

3,591,654

PROCESS FOR ALKYLATION OF AN ISOPARAFFIN WITH AN OLEFIN AND WITH SULFURIC ACID-AROMATIC HYDROCARBON COMPLEX REACTION PRODUCTS

Arthur Newton, Johannesburg, Transvaal, Republic of South Africa, assignor to Texaco Trinidad, Inc., Trinidad, West Indies

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,746

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.61 6 Claims

Hydrocarbon stock comprising paraffins and aromatics is treated with strong sulfuric acid forming acid complex reaction products and the resulting acid-acid complex mixture operation, having a titratable acidity above 85 percent sulfuric acid by weight, is employed as a catalyst for the alkylation of an isoparaffin with an olefin and is more active as a catalyst than is indicated by its titratable acidity.

3,591,655

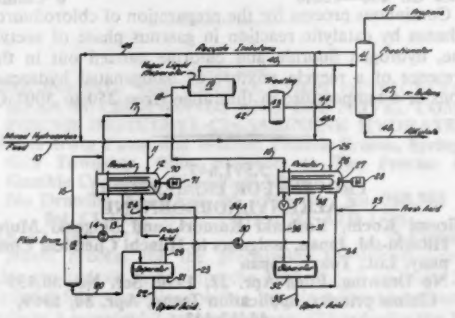
COMBINATION OF EMULSION FLASHING AND EFFLUENT REFRIGERATION IN SULFURIC ACID ALKYLATION

Ralph M. Lewis, Nederland, Tex., Henry D. Moorer, Richmond, Va., and James O. Francis, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 16, 1968, Ser. No. 783,932

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.62 3 Claims



Process for obtaining improved refrigeration results in sulfuric acid alkylation utilizing two alkylation reactor: The emulsion of acid and hydrocarbon from one

reactor is flashed and the resulting mixture is separated into a cold acid phase and a cold hydrocarbon phase. The acid phase is used to cool this reactor while the hydrocarbon phase is combined with the reaction mixture from the other reactor to provide temperature reduction. The reaction mixture of this reactor is separated into acid and hydrocarbon phases, the acid phase returned to said reactor and portions of the hydrocarbon phase is passed through the tube bundles in each reactor. Pressure reduction provides effluent cooling in one of the reactors.

3,591,656

HETEROGENEOUS CATALYST PROCESS

Wolfram R. Kroll, Linden, N.J., assignor to Esso Research and Engineering Company

No Drawing. Original application Oct. 10, 1967, Ser. No. 674,709. Divided and this application Jan. 24, 1969, Ser. No. 793,877

Int. Cl. C07c *5/02, 5/18*

U.S. Cl. 260—683.9 11 Claims

Heterogeneous conversion catalysts are prepared by forming, in an inert atmosphere, complexes between a reduced transition metal and a support, the complex is then stabilized by heating. The catalysts so formed may be used for the conversion of organic feed compounds in the presence of hydrogen.

3,591,657

BLENDING RESIN AND HIGH TRANSPARENCY HIGH IMPACT STRENGTH VINYL CHLORIDE POLYMER BLENDS CONTAINING SAME

Fumio Ide and Seji Deguchi, Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed July 19, 1968, Ser. No. 746,024

Claims priority, application Japan, July 28, 1967, 42/48,571

Int. Cl. C08f *29/24, 41/12;* C08d *9/08*

U.S. Cl. 260—876R 6 Claims

A resinous additive containing a styrene, n-butyl acrylate and butadiene-1,3 elastomer in admixture with a copolymerizate of styrene and methyl methacrylate and/or acrylonitrile. Vinyl chloride polymer compositions containing this resinous additive and having both excellent transparency and impact resistance.

3,591,658

PRODUCTION OF BUTADIENE-STYRENE GRAFT COPOLYMERS WITH A NICKEL CARBOXYLIC ACID SALT-BORON TRIFLUORIDE ETHERATE-TRIALKYLALUMINUM CATALYST

Akira Onishi, Shiro Anzai, Takao Ishikawa, Akira Koga, Koichi Irako, and Motoki Ishii, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 474,500, July 23, 1965. This application July 2, 1968, Ser. No. 741,909

Claims priority, application Japan, Apr. 30, 1965, 40/25,215

Int. Cl. C08f *15/04*

U.S. Cl. 260—880 6 Claims

A process for manufacturing rubbery or plastic butadiene graft-copolymers having a cis-1,4 content of at least 85% and substantially no gel, which comprises polymerizing butadiene, and copolymerizing styrene at a temperature of from 80° C. to 180° C., with a catalyst system consisting of (A) an organic carboxylic acid salt of nickel, (B) a boron trifluoride etherate and (C) a trialkylaluminum.

3,591,659

POLYESTER-ACRYLIC ACID ESTER POLYMER THERMOPLASTIC MOULDING COMPOSITIONS

Ludwig Brinkmann, Frankfurt am Main, Harald Cherdron, Wiesbaden, and Klaus-Dieter Asmus, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,839

Claims priority, application Germany, Oct. 10, 1967, P 16 94 200.0

Int. Cl. C08f *29/10, 29/12*

U.S. Cl. 260—873 18 Claims

Thermoplastic moulding compositions comprising linear saturated polyesters and polymers of esters of acrylic acid, from which shaped articles can be made having a good hardness, abrasion resistance and solvent resistance, and a particularly high impact strength.

3,591,660

THERMOPLASTIC COMPOSITIONS FOR THE PREPARATION OF INHERENTLY FLEXIBLE SHEET MATERIALS

Glen H. Graham and Robert R. Blanchard, Port Allen, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 22, 1967, Ser. No. 684,925

Int. Cl. C08f *29/24, 29/12*

U.S. Cl. 260—897 6 Claims

This invention relates to thermoplastic compositions based on intimate blends of certain chlorinated olefin polymers, vinyl chloride polymers and copolymers of ethylene and copolymerizable alkyl esters of an alpha, beta-ethylenically unsaturated acid. These compositions are inherently flexible under usual environmental conditions and retain such flexibility to an unexpected extent at low temperatures.

3,591,661

POLYMERIC PHOTOSENSITIZERS

Fulton Floyd Rogers, Jr., Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 23, 1969, Ser. No. 844,171

Int. Cl. C08f *37/18*

U.S. Cl. 260—897 2 Claims

Improved copolymeric photosensitizers comprising alpha olefin and acryloxyalkyl and methacryloxyalkyl substituted anthraquinones, useful for crosslinking polymers.

3,591,662

PHOSPHORUS CONTAINING ALPHA OXIMINO ACETIC ACID NITRILES

Walter Lorenz, Wuppertal, Vohwinkel, Christa Fest, Wuppertal, Elberfeld, Ingeborg Hammann, Cologne, Manfred Federmann and Winfried Flucke, Wuppertal, Elberfeld, and Wilhelm Stendel, Wuppertal, Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

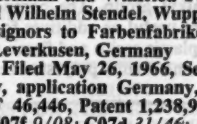
No Drawing. Filed May 26, 1966, Ser. No. 553,031

Claims priority, application Germany, June 26, 1965, F 46,446, Patent 1,238,902

Int. Cl. C07f *9/08;* C07d *31/46;* A01n *9/36*

U.S. Cl. 260—940 22 Claims

Phosphorus-containing α-oximino-aryl acetic acid nitrile having the formula:



in which R_1 is alkyl and haloalkyl; R_2 is alkyl alkoxy, haloalkoxy, alkyl amino, di-alkyl amino, phenyl, phenoxy,

cyclohexyl and cyclohexyloxy; R_3 is phenyl, naphthyl, pyridyl and substituted phenyl which is substituted with mono-, di- and trihalo, alkyl, alkoxy, alkyl mercapto and/or nitro; and X is oxygen and sulfur, which possess biocidal properties, and which may be prepared by reacting the corresponding phosphorus ester halide with the appropriate α-oximino arylacetic acid nitrile in the form of the corresponding salt or in the presence of an acid-binding agent. The compounds are pesticides.

3,591,663

CHLOROALKYL-THIOL-PHOSPHORIC ACID ESTERS AND ESTER AMIDES

Hellmut Hoffmann, Wuppertal-Elberfeld, and Hans Scheinpflug, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 8, 1968, Ser. No. 727,697
Claims priority, application Germany, May 10, 1967, F 52,369
Int. Cl. C07f *9/08*; A01n *9/36*
U.S. Cl. 260—965 **10 Claims**

O-chloroalkyl-S-(alkyl, cycloalkyl, phenyl and chloro-, alkyl-, nitro- and/or alkylmercapto-substituted phenyl)-[O- and S-(alkyl, cycloalkyl, phenyl and chloro-, alkyl-, nitro- and/or alkylmercapto-substituted phenyl) as well as N-alkyl and N,N-dialkyl]-thiol and -dithiol-phosphoric acid esters and -thiol-phosphoric acid ester amides, which possess fungicidal properties and which may be produced by reacting the corresponding O-chloroalkyl-S-(alkyl, cycloalkyl, phenyl and chloro-, alkyl-, nitro- and/or alkylmercapto-substituted phenyl)-thiol-phosphoric acid diester chloride with the appropriate alcohol, mercaptan, phenol, thiophenol, N-alkyl amine or N,N-dialkylamine, in the presence of an acid binding agent or with the second component in the form of its salt, e.g. alkali metal or ammonium salt.

3,591,664

PROCESS FOR THE PREPARATION OF TRI-SUBSTITUTED HYDROCARBYL PHOSPHATES

Yutaka Kodama and Tsutomu Kodama, Toyama-shi, and Masao Nakabayashi, Namerikawa-shi, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,241
Int. Cl. C07f *9/08*
U.S. Cl. 260—973 **2 Claims**

Preparation of tri-substituted hydrocarbyl phosphates, by reacting dihydrocarbylchlorophosphates with alcohols in the presence of caustic alkalis, such as caustic soda and caustic potash, etc., whereby the hydrogen chloride formed simultaneously is neutralized quickly with the caustic alkali. According to this process, it is possible not only to prevent the decomposition of dihydrocarbylchlorophosphates but also to suppress the side reaction represented by the equation:

$$(RO)_3PO+HCl\rightarrow(RO)_2P(O)OH+RCl$$

wherein R is an alkyl group. The compounds produced by the invention are useful as additives for gasoline, plasticizers for thermoplastic resins and flame retarding agents for rigid polyurethane foam, polyester resin, etc.

3,591,665

PROCESS FOR PRODUCING PHYTIC ACID

Goro Kimura, Kamakura, Eiichi Noda, Hisagi Zushi, Hideaki Takeuchi, Yokohama, and Koji Tsukushiro, Isehara-machi, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

No Drawing. Filed Sept. 8, 1967, Ser. No. 666,448
Int. Cl. C07f *9/08*
U.S. Cl. 260—983 **10 Claims**

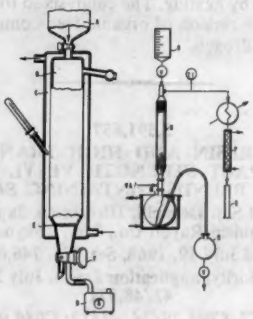
Phytic acid is obtained by extracting phytin from cereals, brans, glutens, embryos, plant seeds and/or their defatted sediments with a dilute aqueous solution of an acid, precipitating the phytin by adding an alkaline substance so as to adjust the pH of the extract to the alkaline side, filtering and dispersing it in water, treating the dispersion with a cation exchange resin and then with a weak anion exchange resin, and concentrating it. The phytic acid thus obtained is useful as a metal-inactivator in fats and oils, a stabilizer of various foods and food products, a stabilizer of vitamins, a softener of water, an antioxidant of fats and oils, a corrosion inhibitor for many metals and as an additive in fermentation.

3,591,666

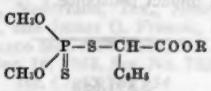
METHOD OF LOWERING THE TOXICITY OF ALKYL ESTERS OF O,O-DIMETHYLDITHIO-PHOSPHORYL-ALPHA-PHENYLACETIC ACID

Giovanno Pellegrini, Romano Santi, and Nicola Troiani, Milan, Italy, assignors to Montecatini Edison S.p.A.

Filed Jan. 9, 1967, Ser. No. 608,092
Claims priority, application Italy, Jan. 13, 1966, 618/66
Int. Cl. A01n *9/36*; C07f *9/08*
U.S. Cl. 260—990 **1 Claim**



Described is a method of lowering the toxicity of compounds of the formula:



wherein R is linear or branched alkyl from 1 to 5 carbon atoms. The method comprises subjecting the compound to at least one distillation treatment in countercurrent vapor.

3,591,667

METHOD OF PRODUCING A CELLULOSE HEMODIALYSIS MEMBRANE

Virendra Kumar Kulshrestha, Salt Lake City, Utah, assignor to University of Utah

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,029
Int. Cl. C08b *1/00, 29/24*
U.S. Cl. 264—218 **7 Claims**

The invention disclosed herein relates to a novel method for producing a regenerated cellulose hemodialysis membrane. The cellulose is dissolved in a cupriethylenediamine hydroxide solution and then cast into a film and suitably treated to produce a hemodialysis membrane of improved permeability and ultrafiltration. Cuenophane is the name chosen by the inventor to be applied to this regenerated cellulose membrane.

3,591,668

STRENGTHENING FULLY SINTERED ALUMINA AND TITANIA ARTICLES BY REHEATING IN A FLUORINE ATMOSPHERE

Henry P. Kirchner and Ralph E. Walker, State College, Pa., assignors to Henry P. Kirchner, State College, Pa.

No Drawing. Filed May 28, 1968, Ser. No. 732,521
Int. Cl. C04b *33/32, 33/34, 35/64*
U.S. Cl. 264—65 11 Claims

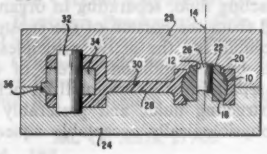
Alumina and titania bodies which have previously been fully sintered by conventional techniques are reheated to at least 1400° C. in an atmosphere containing at least 20% fluorine for a period of about 1–4 hours to substantially improve their strength.

3,591,669

PLASTIC UNIVERSAL BEARINGS AND METHOD OF MANUFACTURE THEREOF

Thomas J. Membry, Parsippany, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 7, 1968, Ser. No. 727,229
Int. Cl. B29b *3/00*
U.S. Cl. 264—101 2 Claims



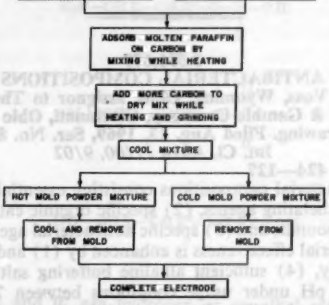
This disclosure relates to a plastic universal or self-aligning bearing of the ball and socket type and the method of manufacture thereof. The bearing is formed in a two-shot molding process in which a plastic bearing member is first molded and thereafter swelled by increasing the moisture content thereof. The swelled plastic bearing member is then inserted into a second die cavity in which a second material, plastic or metal, is molded into a suitable socket member which entraps the swelled insert therein. On subsequent treatment the moisture content of the insert is reduced, thus causing the insert to return to a smaller, or intial volume. This creates a clearance between said bearing member and said socket member which acts to lessen any frictional interference between said members on relative movement thereof.

3,591,670

METHOD OF PRODUCING A PARAFFIN-ACTIVE CARBON ELECTRODE

Donald H. Grangaard, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Original application Dec. 27, 1966, Ser. No. 604,933, now Patent No. 3,459,652, dated Aug. 5, 1969. Divided and this application Mar. 17, 1969, Ser. No. 807,818
Int. Cl. H01m *13/04*
U.S. Cl. 264—105 4 Claims


HOT MOLTEN PARAFFIN
ACTIVE CARBON POWDER
ADSORB MOLTEN PARAFFIN ON CARBON BY MIXING WHILE HEATING
ADD MORE CARBON TO DRY MIX WHILE HEATING AND GRINDING
COOL MIXTURE
HOT MOLD POWDER MIXTURE
COLD MOLD POWDER MIXTURE
COOL AND REMOVE FROM MOLD
REMOVE FROM MOLD
COMPLETE ELECTRODE

A porous, low cost alkali stable electrode which is resistant to wetting, highly efficient for the electrolytic reduction of oxygen to perhydroxyl ion and formed by cold or hot pressing activated carbon having paraffin intimately adsorbed thereon.

3,591,671

AGGLOMERATION OF PLASTIC PARTICLES IN LIQUID SUSPENSION

William E. Burt and Michael E. Kucsma, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,835
Int. Cl. B01j *2/06*
U.S. Cl. 264—117 7 Claims

A process for preparing large particles of plastic materials, particularly polyvinyl chloride. A substantially water immiscible solvent for the plastic material is first dispersed in an aqueous medium. The aqueous medium is heated to a temperature in the range of from about 45° C. to about 85° C. The water-solvent mixture is stirred to disperse the solvent into fine droplets. Small particle size plastic material is then added to the water-solvent mixture while continuing the stirring. Stirring is continued until agglomerates of the desired size are formed. Solvent is removed by distillation and the large particle size plastic material is recovered by centrifuging or filtering. Particles produced by this process are suitable for use as a filter media.

3,591,672

PROCESS FOR THE PRODUCTION OF A CONTINUOUS FILAMENTARY YARN

Stanley Davies, Goytre, and Haydn Leigh Canton, Cwmbran, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 22, 1967, Ser. No. 684,954
Claims priority, application Great Britain, Dec. 8, 1966, 55,062/66
Int. Cl. D01d *5/20*
U.S. Cl. 264—167 8 Claims

A process for the production of a spun continuous filament synthetic yarn having variable properties along its length comprising applying to the spun, solidified, undrawn yarn a plasticiser for the yarn material in an amount varying along the length of the yarn to produce relatively plasticised yarn portions and relatively unplasticised yarn portions and thereafter drawing the yarn to an extent such that variable properties are imparted along its length.

3,591,673

METHOD FOR MELT-SPINNING FIBERS REINFORCED WITH PARTICLES OF POLY(1,4-BENZAMIDE)

Harold Pollack, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 24, 1968, Ser. No. 747,111
Int. Cl. B28b *3/20*
U.S. Cl. 264—176 7 Claims

A method for melt spinning fibers reinforced with particles of poly(1,4-benzamide) of specific characteristics. The solid reinforcing polymer is dispersed in a melt of the matrix polymer, the melt is extruded and the resulting fibers are drawn.

3,591,674

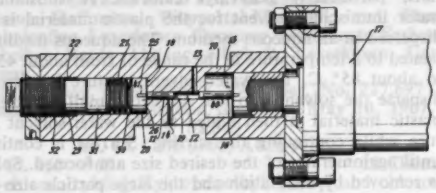
PROCESS FOR THE PREPARATION OF POLYMERIC MATERIALS

Thomas Paul Engel, 6056 Heusenstamm, Offenbach am Main, Germany

Filed Mar. 9, 1967, Ser. No. 621,952
Claims priority, application Great Britain, Mar. 14, 1966, 11,128/66
Int. Cl. B29d *23/04;* B29f *1/08*
U.S. Cl. 264—209 20 Claims

The present invention relates to a process for the manufacture of shaped articles of a cross-linked thermoplastic material which process comprises mixing a thermoplastic

material capable of forming a free radical with a cross-linking agent, subjecting said material to instantaneous compression at a pressure in excess of 2000 atmospheres to effect uniform distribution of the cross-linking agent within said thermoplastic material under conditions such that substantial cross-linking of the thermoplastic material does not occur, and thereafter forming shapes of the mixture and causing or allowing the cross-linking of the shaped material to take place. This invention also includes apparatus comprising a pressure chamber, first and second pressure members capable of operating to



exert pressure within said chamber, motor means for said first pressure member adapted to move said first member in said chamber, inlet means for said chamber adapted to be closed by said first member and outlet means for said chamber adapted to be closed by said second member, in which a material introduced into the chamber is subjected to pressure exerted by said first member and which when the pressure exerted on said material reaches a predetermined maximum the second pressure member moves to open the outlet to permit discharge of the material from the chamber.

3,591,675

COMPOSITION AND METHOD FOR PREVENTING FORMATION OF DENTAL PLAQUE

Herbert Brilliant, 191 Presidential Blvd., Bala-Cynwyd, Pa. 19004

No Drawing. Continuation-in-part of application Ser. No. 557,921, June 16, 1966. This application June 20, 1969, Ser. No. 835,267

Int. Cl. A61r *7/16*

U.S. Cl. 424—54 **2 Claims**

A composition, essentially consisting of a substantially saturated aqueous solution of carbon dioxide and a cationic surface active agent, is applied to the teeth daily by a simple rinsing technique. Optionally, the composition could include ethyl alcohol. Preferably, the teeth should first be given a thorough prophylaxis by a dentist using a pumice paste applied with a motor-driven flexible cup in order to remove heavy accumulations of dental plaque and tartar that may be present; thereafter, such prophylaxis should be required with much less frequency than heretofore has been necessary if the novel composition is applied daily.

3,591,676

SURGICAL ADHESIVE COMPOSITIONS

Gary F. Hawkins, Kingsport, Tenn., and David W. Fassett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,847

Int. Cl. A61l *15/00, 17/00*

U.S. Cl. 424—81 **2 Claims**

Surgical adhesive compositions for bonding body tissues and characterized by a high degree of spreadability and good foreign body reaction comprising comprising mixtures of methyl 2-cyanoacrylate with dimethyl methylenemalonate and with higher esters of 2-cyanoacrylic acid.

3,591,677

ALLERGENIC EXTRACT AND PROCESS FOR PREPARING SAME

Margaret Strauss Kramer, New York, N.Y., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Apr. 3, 1969, Ser. No. 813,297

Int. Cl. A61k *23/00*

U.S. Cl. 424—91 **14 Claims**

A process for preparing antigenic or allergenic extracts and the product obtained thereby comprising treating with an aqueous extracting fluid, substances known to contain physiologically active principles which elicit allergenic and/or antigenic responses, separating the aqueous extracting fluid containing the water-soluble active principles from the water-insoluble portion of the substance, treating the water-insoluble portion of the substance with an aqueous-organic solvent or non-aqueous solvent extracting fluid, separating in organic solvent extracting fluid from the portion of the substance insoluble therein, insolubilizing the active principles contained in said extracts by the addition thereto of an aluminum compound, separating the insolubilized active principles from the extracting fluids and preferably resuspending same in a physiologically acceptable aqueous fluid.

3,591,678

METHOD OF PURIFYING INTRINSIC FACTOR

Leon Ellenbogen, New City, N.Y., and Derek Rowland Highley, Upper Saddle River, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 615,355, Feb. 13, 1967, which is a continuation-in-part of application Ser. No. 340,805, Jan. 28, 1964. This application Sept. 5, 1969, Ser. No. 855,768

Int. Cl. A61k *27/00*

U.S. Cl. 424—96 **4 Claims**

A process for purifying intrinsic factor by a batch chromatography process which utilizes an ion exchange resin; and the resultant high purity intrinsic factor. Typically, impure intrinsic factor is dissolved in a buffer solution having relatively low pH and ionic strength, and the resultant solution is contacted with a cellulosic exchange resin. The resin is separated from the solution and the purified intrinsic factor is eluted therefrom with a buffer solution having a higher pH and ionic strength than the buffer solution in which the impure intrinsic factor was dissolved. The product is recovered from the eluate by evaporating the liquid solvent. The residue, which is the purified product, has a potency of at least 1 N.F. unit in amounts as low as 0.5 mg.

3,591,679

ANTIBACTERIAL COMPOSITIONS

Jack G. Voss, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,907

Int. Cl. A01n *11/00, 9/02*

U.S. Cl. 424—127 **3 Claims**

Antibacterial compositions consisting essentially of (1) specific chelating agents, (2) specific organic cation-forming compounds, and (3) specific antibacterial agents whose antibacterial effectiveness is enhanced by (1) and (2) and, optionally, (4) sufficient alkaline buffering salt to maintain the pH under usage conditions between 7 and 11, and (5) optionally other compatible detergents and/or antibacterial agents; dilute aqueous solutions prepared from said compositions.

3,591,680

CONCENTRATED ANTACID COMPOSITIONS AND METHOD OF PRODUCING ANTACID ACTIVITY

Leon C. Greene, Moorestown, N.J., and Allen Misher, Broomall, and William E. Smith, Fort Washington, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 566,749, July 21, 1966. This application Nov. 17, 1969, Ser. No. 877,476

Int. Cl. A61k *27/00*

U.S. Cl. 424—156 10 Claims

Aqueous pharmaceutical suspensions containing a high concentration of antacid and a method of producing an increased degree of protection and duration of antacid and anti-ulcer activity by orally administering said suspensions.

3,591,681

COMPOSITION CONTAINING SILYL ETHERS OF CHLORAMPHENICOL

Ronald L. Houtman, Parchment, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Aug. 31, 1966, Ser. No. 576,239, now Patent No. 3,442,926, dated May 6, 1969. Divided and this application Oct. 14, 1968, Ser. No. 795,754

Int. Cl. A61k *27/00*

U.S. Cl. 424—184 4 Claims

This invention relates to pharmaceutical compositions for combatting gram-positive and gram-negative bacteria, mycoplasma and rickettsial organisms containing silyl esters of chloramphenicol.

3,591,682

AMINOALKYL PHOSPHITE FUNGICIDES AND USE THEREOF IN AGRICULTURE

Jean Thiolliere, Lyon, France, assignor to Pechiney-Progil, Societe pour le Developpement et La Vente de Specialites Chimiques, Lyon, France

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,282

Claims priority, application France, Apr. 20, 1967, 48,557

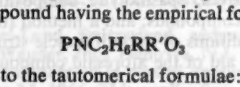
Int. Cl. A01n *9/36*

U.S. Cl. 424—211 1 Claim

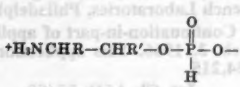
A fungicidal composition containing as the active ingredient a compound having the empirical formula

$$PNC_2H_6RR'O_3$$

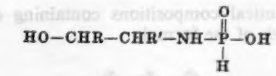
corresponding to the tautomerical formulae:



and/or



and/or



where R and R′ are hydrogen or an alkyl radical, and the method of protecting plants against fungicidal attack by use of same.

3,591,683

PHARMACEUTICAL COMPOSITION INCLUDING PHENOSULFONIC ACID DERIVATIVE OF TETRACYCLINE AND METHOD OF TREATMENT

Carlos Ferrer Salat, Jorge Ferrer Batles, and Juan Colome Riera, Barcelona, Spain, assignors to Laboratories Ferrer S.L., Barcelona, Spain

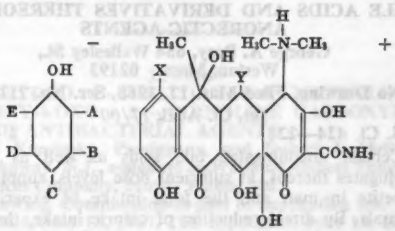
Continuation-in-part of application Ser. No. 727,066, May 6, 1968, which is a division of application Ser. No. 477,032, Aug. 3, 1965. This application June 23, 1969, Ser. No. 835,921

Claims priority, application Spain, Aug. 8, 1964, 302,954

Int. Cl. A61k *21/00*

U.S. Cl. 424—227 6 Claims

A pharmaceutical composition for use in cases of microbial infections comprising a pharmaceutical diluent and a compound of the following formula



wherein X is hydrogen or chlorine if Y is hydrogen and wherein X is hydrogen if Y is OH, and wherein A is —OCH_3 or is hydrogen with the proviso that:

(I) if A is —OCH_3, then B and E are hydrogen and one of the two radicals designated C and D is SO_3^- and the other is hydrogen, and

(II) if A is hydrogen, then B is methyl, C is SO_3^-, D is hydrogen and E is isopropyl.

3,591,684

CONTROLLING SOUTHERN ARMYWORM WITH 3-IODO-3′,4′,5-TRICHLOROSALICYLANILIDE

Jack D. Early, Bethesda, Md., and John P. Chupp, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application May 29, 1968, Ser. No. 732,870, now Patent No. 3,541,147, dated Nov. 17, 1970. Divided and this application Feb. 11, 1970, Ser. No. 10,632

Int. Cl. A01n *9/20*

U.S. Cl. 424—230 1 Claim

Control of *Prudenia eridania* larvae, commonly known as southern armyworm larvae with 3-iodo-3′,4′,5-trichlorosalicylanilide.

3,591,685

CONTROLLING MOSQUITOES WITH 3′,4′-DICHLORO-5-NITRO-3-PHENYLSALICYLANILIDE

John P. Chupp, Kirkwood, Mo., and Jack D. Early, Bethesda, Md., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application May 28, 1968, Ser. No. 732,534, now Patent No. 3,541,148, dated Nov. 17, 1970. Divided and this application Feb. 11, 1970, Ser. No. 10,630

Int. Cl. A01n *9/20*

U.S. Cl. 424—230 1 Claim

Controlling mosquitoes with 3′,4′-dichloro-5-nitro-3-phenylsalicylanilide.

3,591,686

ANTI-INFLAMMATORY COMPOSITIONS AND METHODS UTILIZING N-ACYLCYSTEINES AND THE β-ALKYL AND CARBOXYL DERIVATIVES THEREOF

Aaron Leonard Sheffner, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

No Drawing. Continuation-in-part of application Ser. No. 482,931, Aug. 26, 1965. This application Aug. 1, 1967, Ser. No. 657,498

Int. Cl. A61u *27/00*

U.S. Cl. 424—234 21 Claims

N-acylcysteines and the β-alkyl and carboxyl derivatives thereof have anti-inflammatory action in animals.

3,591,687

BILE ACIDS AND DERIVATIVES THEREOF AS ANORECTIC AGENTS

George A. Bray, 654 Wellesley St., Weston, Mass. 02193

No Drawing. Filed Mar. 13, 1968, Ser. No. 712,583

Int. Cl. A61k *17/00*

U.S. Cl. 424—238 2 Claims

Certain unconjugated bile acids as well as certain conjugates thereof, at sufficient dose levels, suppress the appetite in man and the food intake of experimental animals. By direct reduction of caloric intake, they provide a variable and reversible process for the treatment of obesity. Among these acids are those synthesized by the human liver. No toxic or otherwise untoward effect on the central nervous system, on renal, hepatic or hematological functions, or on other body organs has been noted during their use.

3,591,688

METHOD OF PREVENTING OVULATION AND COMPOSITION THEREFOR

Robert C. Jones, Narberth, and Richard A. Edgren, Berwyn, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 818,121, Apr. 21, 1969, which is a continuation-in-part of application Ser. No. 767,823, Oct. 15, 1968. This application Aug. 22, 1969, Ser. No. 852,456

Int. Cl. A61k *17/06*

U.S. Cl. 424—239 20 Claims

Compositions comprising (a) a progestogen, specifically, a 3 - cyclopentyloxy-13-polycarbonalkyl-17α-ethynylgona-3,5-diene-17β-ol, or 17-acylate in admixture with (b) an estrogen, specifically, a 3-cyclopentyloxy-13-alkyl-17α-ethynylgona-1,3,5(10-trien-17β-ol or a Δ^7-dehydro analog thereof are useful to prevent ovulation in warm-blooded ovulating vertebrates after oral administration. In one advantageous aspect, because of their prolonged duration of activity, the instant compositions may be administered in simplified regimens, e.g., at once-a-week intervals.

3,591,689

PROGESTATIONAL COMPOSITION IN ORAL DOSAGE FORM

Neil H. Mercer and Kenneth P. Stremming, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed June 4, 1969, Ser. No. 830,520

Int. Cl. A61j *3/07*; A61k *9/04, 17/06*

U.S. Cl. 424—243 6 Claims

A therapeutic composition comprising a solution of megestrol acetate in coconut oil in encapsulated form.

3,591,690

METHOD OF TREATMENT OF DIARRHEA IN PIGLET OF 2–4 WEEKS OF AGE

Kiyoshi Iwaya, 5–16–3 Satsukigaoka, Ikeda-shi, Osaka Prefecture, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 604,558, Dec. 27, 1966. This application May 8, 1969, Ser. No. 823,162

Claims priority, application Japan, Feb. 19, 1966, 41/10,175

Int. Cl. A61k *17/12, 17/16*

U.S. Cl. 424—243 9 Claims

Diarrhea in piglets of two to four weeks of age is successfully treated with the aid of therapeutic compositions possessing specific activity against such piglet diarrhea and comprising as active ingredient betamethasone, dexamethasone, prednisolone prednisone, paramethasone, methylprednisolone, triamcinolone, hydrocortisone or cortisone.

3,591,691

COMPOSITIONS AND METHODS FOR TREATMENT OF SPASTIC CONDITIONS

Charles Gansser, Essonne, France, and Walter Schindler, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Division of application Ser. No. 647,228, June 19, 1967, now Patent No. 3,505,314, dated Apr. 7, 1970, which is a continuation-in-part of application Ser. No. 235,177, Oct. 30, 1962, which in turn is a continuation-in-part of application Ser. No. 52,044, Aug. 26, 1960. This application Mar. 4, 1968, Ser. No. 735,934

Claims priority, application Switzerland, Aug. 28, 1959, 77,491/59; Jan. 13, 1960, 299/60; Feb. 25, 1960, 2,190/60

Int. Cl. A61u *17/00*

U.S. Cl. 424—244 4 Claims

5-(n-butyl)-iminodibenzyls which are substituted in γ-position at the n-butyl substituent by a dimethylamino or diethylamino radical as well as pharmaceutically acceptable salts thereof with inorganic and organic acids, which compounds have strong spasmolytic and especially musculotropic action rendering then useful in the treatment of psychosomatic disturbances, especially spastic conditions of smooth muscle structures of the gastro-intestinal, urogenital and biliary tracts and/or the bronchial system while being practically free from antidepressant action on the central nervous system whereby these compounds are distinguished from well-known antidepressant iminodibenzyl derivatives; spasmolytic compositions containing the aforesaid compounds; and a method for the treatment of spastic conditions of smooth muscle structures in mammals with the aid of the aforesaid compounds.

3,591,692

ANTI-INFLAMMATORY COMPOSITIONS CONTAINING HALOGENATED HETEROCYCLIC ACIDS AND METHODS OF USING THEM

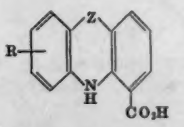
Blaine M. Sutton, Hatboro, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 524,828, Feb. 3, 1966. This application June 4, 1968, Ser. No. 734,215

Int. Cl. A61k *27/00*

U.S. Cl. 424—247 9 Claims

Pharmaceutical compositions containing dosage units of compounds of the formula:



in which R is a halogen such as fluoro, bromo or chloro or a trifluoromethyl and Z is sulfur or oxygen, have anti-inflammatory activity. The active ingredients are prepared by a Smiles rearrangement for the phenothiazine series (when Z is sulfur) or a ring closure of a 3-(2'-acylaminophenoxy)-2-chlorobenzoic acid for the phenoxazine series (when Z is oxygen).

3,591,693

COMPOSITIONS AND METHOD FOR TREATING MYCOBACTERIUM TUBERCULOSIS WITH 2,4,6-TRIS(ALKYLAMINO)-s-TRIAZINE

Margot Louise Cantrall, New City, Martin Leon Sassiver, Monsey, and Robert Gordon Shepherd, South Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 22, 1969, Ser. No. 827,031

Int. Cl. A61k *27/00*

U.S. Cl. 424—249 **10 Claims**

This disclosure describes compositions of matter useful for the treatment of *Mycobacterium tuberculosis* infections in warm-blooded animals and the method of treating *Mycobacterium tuberculosis* infections in warm-blooded animals therewith, the active ingredients of said compositions of matter being certain 2,4,6-tris(alkylamino)-s-triazines.

3,591,694

TREATMENT OF CHRONIC RESPIRATORY DISEASE IN POULTRY WITH 1,2,3,4-TETRAHYDROPHENAZINE - 5,10 - DIOXIDES AND DERIVATIVES THEREOF

James David Johnston, Old Saybrook, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

No Drawing. Application Oct. 18, 1966, Ser. No. 587,420, now Patent No. 3,480,713, dated Nov. 25 1969, which is a continuation-in-part of application Ser. No. 502,602, Oct. 22, 1965. Divided and this application Dec. 18, 1968, Ser. No. 798,547

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **2 Claims**

A series of 3,4-dihydrophenazine- and 1,2,3,4-tetrahydrophenazine-5,10-dioxides and the non-toxic salts thereof used in controlling chronic respiratory disease in poultry and in promoting growth and improving feed efficiency of animals in general.

3,591,695

ANTIDEPRESSANTS METHODS AND COMPOSITIONS OF 4 - PHENYL-3,4-DIHYDROQUINAZOLINES

Hans Ott, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 557,370, June 14, 1966. This application Aug. 15, 1969, Ser. No. 850,669

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **7 Claims**

Disclosed are pharmaceutical compositions and method for effecting central nervous systems stimulation and utilizing, as the active pharmaceutical agent, a compound of the class of 4-phenyl-3,4-dihydroquinazolines.

3,591,696

METHOD OF TREATING JAUNDICE IN ANIMALS

Allan H. Conney, Westchester, and John J. Burns, New York, N.Y., assignors to Burroughs Wellcome Co., Tuckahoe, N.Y.

No Drawing. Original application June 15, 1966, Ser. No. 557,606. Divided and this application Nov. 6, 1969, Ser. No. 871,259

Int. Cl. A61k *27/00*

U.S. Cl. 424—254 **4 Claims**

A method of treating an animal suffering from jaundice which comprises administering to the animal a pharmacologically effective jaundice treatment amount of a compound 1-phenyl-5,5-diethyl barbituric acid.

3,591,697

1,4-DIHYDRO - 1 - SUBSTITUTED-6,7-METHYLENEDIOXY-4-OXO - 3 - QUINOLINE CARBOXYLIC ACID ANTIBACTERIAL AGENTS

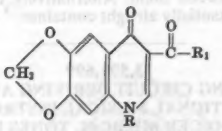
Daniel Kaminsky, Parsippany, and Robert I. Meltzer, Rockaway, N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 639,304, May 18, 1967. This application June 19, 1970, Ser. No. 47,893

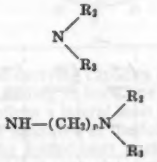
Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **4 Claims**

The present invention relates to compositions of matter containing quinolines of the formula:

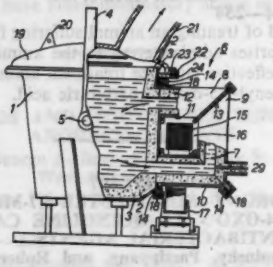


wherein R represents alkyl, substituted lower alkyl, cycloalkyl, alkenyl and aralkyl; R_1 represents O-alkyl, O-mono or dialkylaminoalkyl, O-cycloalkyl, NH-alkyl, NH-aryl,



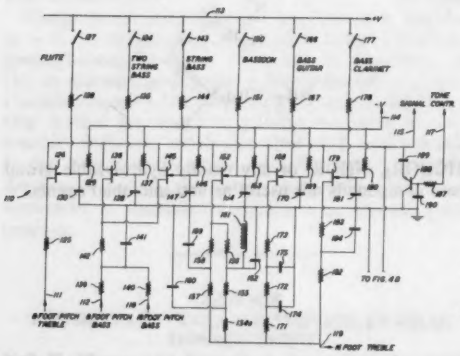
$NHCOOR_2$, NHOR, or any readily hydrolyzable group. These compounds are useful as anti-microbial agents.

3,591,698
METAL TREATMENT APPARATUS
John Christie Howard, Curbar near Sheffield, and Charles Peter Brittain, Whittington, both of, England, assignors to Associated Electrical Industries, Limited, London, England
Filed Nov. 6, 1967, Ser. No. 680,827
Claims priority, application Great Britain, Nov. 9, 1966, 50258/66
Int. Cl. H05b *5/14*
U.S. Cl. 13—29 6 Claims



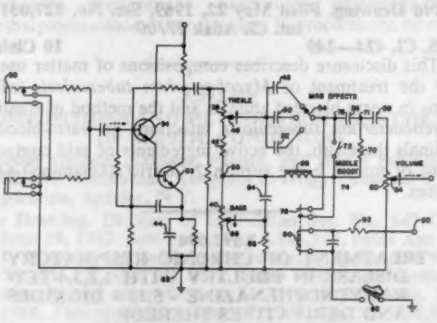
Molten metal equipment comprising a transportable vessel which is substantially airtight and has an enclosed duct extending from the vessel and communicating with its interior at two spaced positions below the normal level of the molten metal, a part of the duct being surrounded by a windowed magnetic core embraced by an induction coil. The enclosed duct is disposed on one side of the vessel and lies in a vertical plane like the handle of a mug. In one embodiment the vessel and duct are substantially airtight in themselves and at any connections between them. Alternatively they can be contained in a substantially airtight container.

3,591,699
MUSIC VOICING CIRCUIT DERIVING AN INPUT FROM A CONVENTIONAL MUSICAL INSTRUMENT AND PROVIDING VOICED MUSICAL TONES UTILIZING THE FUNDAMENTAL TONES FROM THE CONVENTIONAL MUSICAL INSTRUMENT
Royce L. Cutler, 2625 Karbuch, Houston, Tex.
Filed Mar. 28, 1968, Ser. No. 716,964
Int. Cl. G10h *1/06, 1/00*
U.S. Cl. 84—1.11 20 Claims



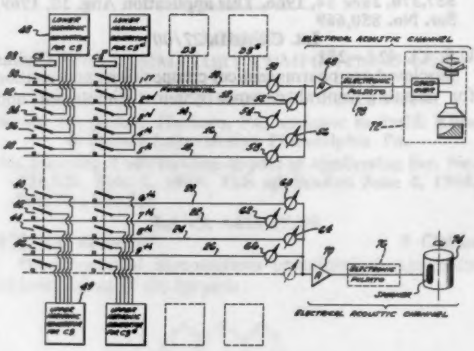
A voicing circuit for use with a conventional musical instrument. A tone pickup is placed on a conventional instrument. For example, a single coil is placed beneath each string on a guitar. The signal formed is the fundamental colored with many harmonics. An electronic circuit filters the harmonics to leave a much cleaner fundamental. The fundamental is voiced by a voicing circuit to add harmonics in such portions as to achieve a desired voicing. The voiced output follows the conventional instrument in terms of relative volume, shift in fundamental, vibrato of the fundamental.

3,591,700
SWITCH OPERATED TONE CONTROL CIRCUITRY AND AMPLIFIER FOR MUSICAL INSTRUMENTS
Fred H. Neubauer, Pacific Palisades, and Sava W. Jacobson, Northridge, both of, Calif., assignors to Warwick Electronics Inc., Chicago, Ill.
Filed Apr. 14, 1967, Ser. No. 631,008
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 9 Claims



The tone control circuit is particularly suited for an amplifier designed primarily for musical tone signals, for example, those generated by an electric guitar. Within the ready and instant control of the instrument player or performer is a switch actuator, such as a foot switch, by means of which there may be selectively connected in and out of the amplifier circuit a frequency-discriminating circuit or network. The network discriminates in favor of a narrow band of frequencies. By operating the foot switch in synchronism with his playing, the performer can create novel effects under his continuous control. The frequency-discriminating network is integrated into the conventional treble and bass manual controls on the amplifier so as to make double use of circuit components and create novel musical response.

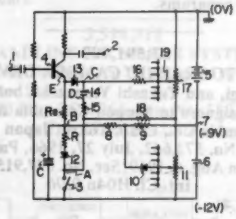
3,591,701
HARMONICALLY RELATED PULSATO SYSTEM
Donald J. Leslie, 1561 Gaywood Drive, Altadena, Calif.
Filed Sept. 2, 1969, Ser. No. 854,529
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 11 Claims



A musical instrument produces electrical impulses corresponding to musical tones. The harmonic components of

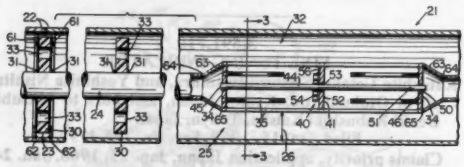
the impulses are segregated into two electrical channels so that, for example, low order harmonics exist in one electrical channel and high order harmonics exist in another channel. A device operating in conjunction with the electrical channel for the low order harmonics adds pulsato in that channel that is more intense than the pulsato, if any, that is added in the other channel. By grouping impulses according to harmonic order rather than according to frequency, accurate simulation of pipe organ characteristics is achieved.

3,591,702
ATTACK AND DECAY CIRCUITRY FOR ELECTRONIC MUSICAL INSTRUMENT
Takeshi Adachi, Shizuoka-ken, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed May 21, 1969, Ser. No. 826,490
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.26 **3 Claims**



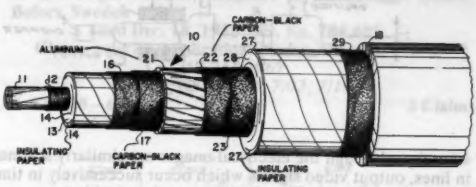
A switching circuit for an electronic musical instrument which is generally composed of an emitter-grounded type transistor amplifier in which an input is supplied to a base, an output is taken out from a collector and a key switch is interposed in an emitter path. The emitter is connected serially through a first resistor, a second resistor, a first diode, and the key switch to a power line. A juncture between the first and second resistors is connected to a cutoff potential via a third resistor and to the power line via a first capacitor for giving a decay effect. The emitter is further connected serially through a second diode, a second capacitor and a fourth resistor, to a juncture between the first diode and the key switch for giving an attack effect.

3,591,703
ELECTRICAL EXPANSION JOINT AND SYSTEM USING SAME
George F. Swenck; John J. Bahen, Jr., and Robert B. Lightner, all of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Oct. 7, 1969, Ser. No. 864,438
Int. Cl. H01b *9/04;* **H02g** *15/24*
U.S. Cl. 174—13 **20 Claims**



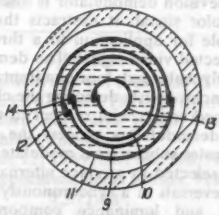
An expansion joint having a pair of spaced supports which are adapted to be fixed to associated ends of a pair of electrical conductors and the expansion joint is provided with a plurality of flexible electrical leads having their opposite ends fastened to the spaced supports. Means is provided for rotating the central portions of the leads to take up varying amounts of slack therein caused by relative movement of the supports toward and away from each other.

3,591,704
HIGH-VOLTAGE CABLE
Lawrence Charles Ebel, Hastings-on-Hudson, N.Y., assignor to Anaconda Wire and Cable Company
Filed Jan. 9, 1969, Ser. No. 790,000
Int. Cl. H01b *7/26*
U.S. Cl. 174—108 **5 Claims**



A high-voltage cable, with an insulating wall built up of dielectric tapes, has an electrically floating metal armor tape at midpotential of the insulation. When the cable is manufactured it can be reeled up after the application of the armor and run through the taping machine a second time to apply the outer layers of insulating tape.

3,591,705
SUPERCONDUCTIVE DEVICES AND CONDUCTORS THEREFOR
Richard Grigsby, London, and Raymond Jeffrey Slaughter, Kent, both of, England, assignors to British Insulated Callender's Cables Limited, London, England
Filed Nov. 19, 1968, Ser. No. 777,121
Claims priority, application Great Britain, Nov. 21, 1967, 52,897/67
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C **10 Claims**

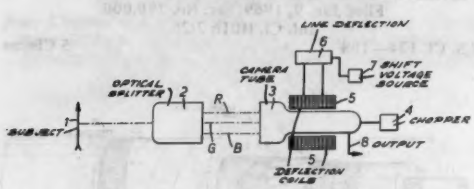


The critical current-carrying capacity of a superconductor strip is increased by folding at least one edge of the strip to form a fold which defines a lateral limit of the superconductor. The strip may be fractured at the fold and the edge portion discarded, or the folded-over portion may remain attached and lie in contact with the surface of the strip. In forming a superconductive cable, the fold is directed away from the return conductor.

3,591,706
MULTI-IMAGE TELEVISION CAMERA
Norman Neville Parker-Smith, Billericay, and Pedro Martinez, Great Baddow, both of, England, assignors to The Marconi Company Limited, London, England
Filed Nov. 15, 1968, Ser. No. 776,212
Claims priority, application Great Britain, Dec. 22, 1967, 58,280/67
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **8 Claims**

A camera in which a number of optical images of a subject of transmission are optically projected adjacent one another on a cathode-ray image-receiving screen and the single cathode-ray beam of the tube scans a number of different electrical images corresponding to the optical images in similar line rasters, the beam being interrupted during

scanning at a frequency which is high relative to the picture frequency and being deflected at a frequency correlated with the interruption frequency between the electrical images



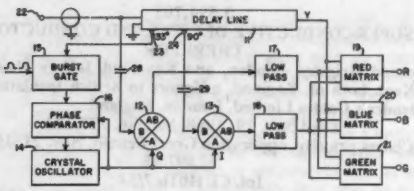
whereby, although the electrical images are similarly scanned in lines, output video signals which occur successively in time are developed from points in different electrical images.

3,591,707

COLOR TELEVISION DEMODULATOR

Harold W. Abbott, Syracuse, N.Y., assignor to General Electric Company

Filed Jan. 8, 1969, Ser. No. 789,878
Int. Cl. H04n 9/50
U.S. Cl. 178—5.4 **13 Claims**



A color television demodulator is disclosed for processing the NTSC color signal. It abstracts three individual color signals suitable for application to a three-color reproducer from the detected video signal. The demodulator employs a pair of doubly balanced four-quadrant, true product multipliers for synchronously detecting the chrominance signal at two preassigned angles with respect to the color subcarrier. When such demodulators process the NTSC color signal, wherein the color subcarrier is modulated on a carrier whose frequency is selected to produce alternate line and alternate field phase reversals in a synchronously detected signal, the chrominance and luminance components need not be separated at the demodulator inputs since the effects of the unwanted luminance components at the outputs of the demodulators are effectively cancelled. This cancellation effect, while imperfect, greatly reduces the need for filtering before and after demodulation. The detection angles of the demodulators are accurately controlled by suitably coupling the demodulators and local oscillator phase control inputs to taps on a delay line to which the video signal is applied.

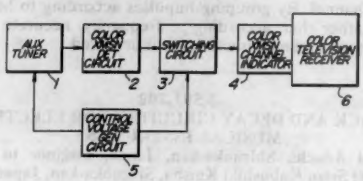
3,591,708

COLOR TELEVISION RECEIVER

Masayoshi Hirashima, Takatsuki-shi, Japan, assignor to Matsurhita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 17, 1969, Ser. No. 807,591
Claims priority, application Japan, Mar. 22, 1968, Apr. 12, 1968, June 25, 1968, June 27, 1968, Dec. 26, 1968, Dec. 26, 1968, 43/19282;43/25107;43/44734;43/45252;44/994;44/995
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 R **10 Claims**

A color television receiver, wherein a tuner is adapted to successively receive different broadcast waves under the control of a control voltage of stepped waveform, switching elements are successively rendered conductive for a predetermined period by a logical product of a signal resulting from detecting as to whether the broadcast stations are transmitting color programs or black-and-white programs, said switching elements corresponding in number to the broadcast waves so that indicator means connected with the respective



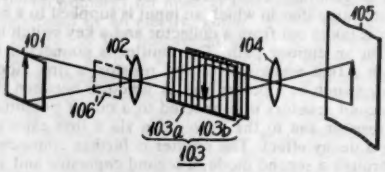
switching elements are energized, thereby indicating whether the broadcast stations are transmitting color programs or black-and-white programs.

3,591,709

PHOTOGRAPHIC CAMERA DEVICE

Toshihiko Takagi, and Takashi Yamazaki, both of Kawasaki-shi, Japan, assignors to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo, Japan

Division of Ser. No. 572,642, July 27, 1966, Pat. No. 3,495,518 this application Aug. 6, 1969, Ser. No. 847,915
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 **6 Claims**



A camera apparatus for reproducing a color picture on monochromatic film with stripe patterns of a filter wherein the filter is placed in the light path of the camera and the stripe patterns correspond to the primary color components of the object. The filter comprises a single filter element which includes strip filter elements of different types with a first filter element being capable of transmitting visible light of all colors, a second filter element capable of transmitting light of only one color, a third filter element capable of transmitting light of a single color different from the first color and a fourth filter element capable of transmitting light of a color different from the other two colors.

3,591,710

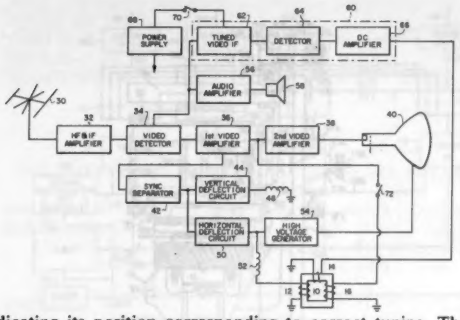
FINE TUNING INDICATOR

Katsuhito Uetake; Seishiro Iwamura, and Yoshihisa Nishitani, all of Otokuni-gun, Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1969, Ser. No. 791,479
Claims priority, application Japan, Jan. 23, 1968, Jan. 24, 1968, Jan. 26, 1968, 43/3867;43/4135;43/4653
Int. Cl. H04n 5/50
U.S. Cl. 178—5.8 **4 Claims**

A sawtooth current for horizontal deflection flows through an exciting winding of a pulse transformer to form pulses across its output winding one for each line. A direct current having a maximum for correct tuning flows through a control transformer winding to displace the pulse with respect to the associated sawtooth current. Upon rotating a finely adjusting knob the pulses are applied to a picture tube to form a verti-

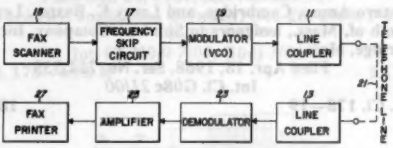
cal line on its faceplate. The knob rotates to bring the line just above a mark disposed on or adjacent the faceplate indicating its position corresponding to correct tuning. Then the line disappears.



3,591,711
LANDLINE FACSIMILE SYSTEM

Paul H. De Groat, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 26, 1966, Ser. No. 553,175
Int. Cl. H04n *5/40*
U.S. Cl. 178—6 **6 Claims**

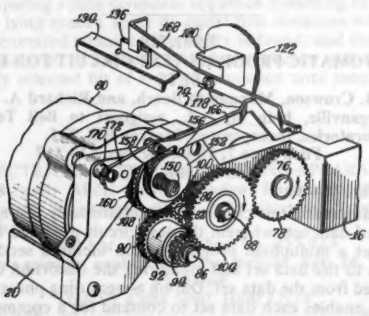


A skip frequency circuit for selectively excluding from the signal spectrum thereof any tonal frequency signals which fall within a predetermined forbidden band in the transmission network of a facsimile system. The forbidden bands would be defined by those control frequencies employed in the landline telephone transmission facilities over which the facsimile system is to operate. In response to the detection of signals within a forbidden zone, a skip or jump is automatically initiated, thus shifting the facsimile video signals to another level thereby avoiding the generation of signal frequencies within a predetermined forbidden frequency zone.

3,591,712
FACSIMILE PRINTER BAR ACTUATING MEANS

Frans Brouwer, Glencoe, and Frank L. Sobchak, Chicago, both of, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed June 21, 1968, Ser. No. 739,018
Int. Cl. G01d *15/24*
U.S. Cl. 178—6.6R **8 Claims**

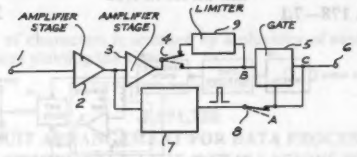


Force transmitting means for moving a printer bar assembly into an operative position for printout of graphic data in facsimile apparatus upon rotation of recording paper drive means at a normal speed.

3,591,713
THERMOGRAPHY EQUIPMENT FOR PRODUCING A DIRECTLY OBSERVABLE THERMAL PICTURE

Tore Bertil Reinhold Olsson, and Ake Valentin Nilsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 18, 1968, Ser. No. 784,601
Claims priority, application Sweden, Dec. 22, 1967, 17,741/1967
Int. Cl. H04n *5/22, 7/02, 7/18*
U.S. Cl. 178—6.8 **3 Claims**

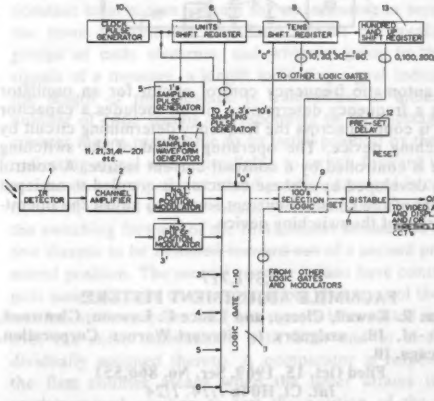


A signal transmission system for passing signals from the detector to the intensity modulating electrode of a picture tube in a thermography equipment of the type in which a "heat picture" of the depicted object is produced on the screen of a cathode-ray tube. The system includes a normal video channel and an additional channel for producing a so-called thermal band. Switching means are provided for simultaneously connecting a limiting device into the normal video channel and connecting the additional channel in parallel with the normal channel. The limiting device limits the output signals from the normal channel to a level below the constant maximum level of the output pulses from the additional channel. A gate is included in the normal channel and is controlled by the output pulses from the additional channel so as to block the normal channel, when output pulses appear in the additional channel.

3,591,714
ARRANGEMENTS FOR SAMPLING AND MULTIPLEXING ELECTRICAL SIGNALS

Leslie Henry Guildford, Haywards Heath, Sussex, England, assignor to U.S. Philips Corporation

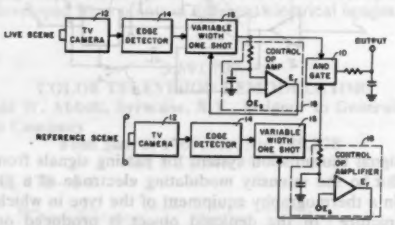
Filed Feb. 12, 1969, Ser. No. 798,742
Claims priority, application Great Britain, Feb. 15, 1968, 7,572/68
Int. Cl. H04n *5/14*
U.S. Cl. 178—6.8 **10 Claims**



A circuit for sampling and multiplexing a plurality of amplitude modulated signals, particularly those from an array of

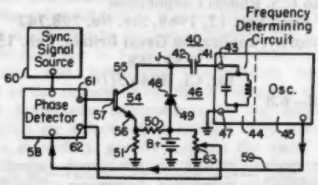
infrared detectors features a plurality of time modulators, e.g. pulse position or pulse width modulators, for each of the signals. Then the signals are multiplexed together. Each of the time modulators are controlled by a sampling waveform generator which can have a variety of sweeps, such as, linear, exponential or reduced linear, to result in various types of amplitude compression.

3,591,715
VARIABLE WIDTH VIDEO EDGE DETECTOR
David Rubin, Riverside, and John B. Seybold, Corona, both of, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 13, 1969, Ser. No. 865,709
Int. Cl. H04n *1/02*
U.S. Cl. 178—7.1 **2 Claims**



A device, used with an analog video correlation, for edge detecting the video input from two TV cameras to immediately discern the time correlations peak from past or future partial correlation peaks providing dependable real time map matching.

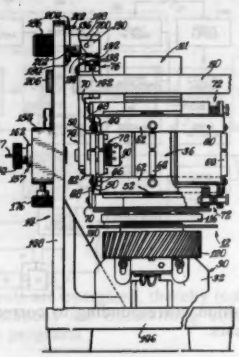
3,591,716
AUTOMATIC FREQUENCY CONTROL CIRCUIT
Howard F. Jirka, Riverside, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Aug. 1, 1968, Ser. No. 749,453
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.3 **7 Claims**



An automatic frequency control circuit for an oscillator having a frequency determining circuit includes a capacitor which is coupled across the frequency determining circuit by a switching device. The operating period of the switching device is controlled by a constant current source. A control signal, developed by a phase detector, is coupled to an input terminal of the constant current source to adjust the operating period of the switching device.

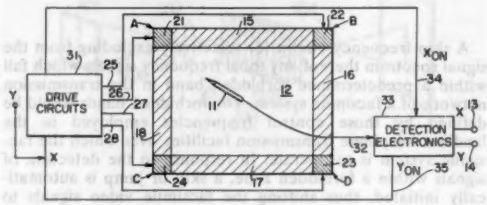
3,591,717
FACSIMILE ADJUSTMENT FIXTURE
Thomas R. Kawall, Cicero, and Lance C. Lawson, Glenwood, both of, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Oct. 15, 1969, Ser. No. 866,551
Int. Cl. H04n *1/14, 1/24*
U.S. Cl. 178—7.6 **10 Claims**

A fixture having an adjustable light source unit for aligning the optical scanners of a facsimile scanner assembly, and having a revolvable stud member with a longitudinal flat and



a lengthwise metal shim relative to which the printer contact means of the scanner assembly may be adjusted.

3,591,718
GRAPHICAL INPUT TABLET
Shintaro Asano, Cambridge, and Larry K. Baxter, Lexington, both of, Mass., assignors to Shintron Company, Inc., Cambridge, Mass.
Filed Apr. 18, 1968, Ser. No. 722,335
Int. Cl. G08c *21/00*
U.S. Cl. 178—19 **18 Claims**

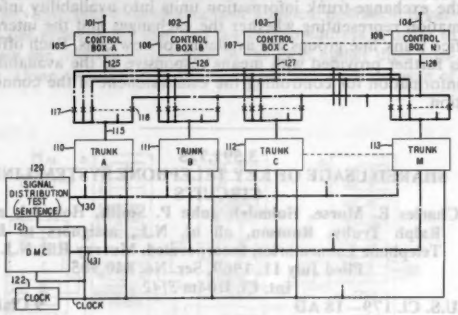


An AC potential field is established on an electrographic tablet. A stylus that may be used to write upon the tablet comprises a capacitive pickup to provide a potential representative of the stylus position. The potential field is alternately switched at a rapid rate between vertical equipotentials and horizontal equipotentials in synchronism with output analog switches coupled to the stylus to provide an X analog signal output and a Y analog signal output representative of the horizontal and vertical coordinates, respectively, of the stylus tip above the tablet.

3,591,719
AUTOMATIC PROGRAM TEST CIRCUIT FOR DATA SETS
Fred B. Crowson, Monmouth Beach, and Richard A. Previte, Morganville, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 7, 1968, Ser. No. 735,317
Int. Cl. H04l *25/02*
U.S. Cl. 178—69 **8 Claims**

An automatic test circuit for simultaneously testing a plurality of data sets wherein the test circuit provided for each data set a multiphase program which includes sending test signals to the data set and measuring the distortion of signal received from the data set. During a measuring phase the test circuit enables each data set to contend for a common measuring circuit to apply signals to the measuring circuit upon seizure thereof and to thereafter release from the measuring circuit in response to a signal from the data set. The test cir-

cuit then either advances to the next program phase if the distortion of the measured signals is below a predetermined



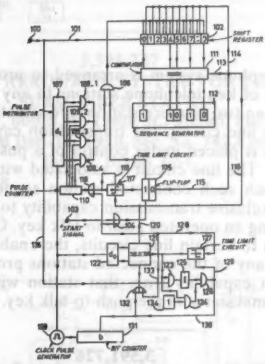
threshold level or again bids for the measuring circuit to repeat the measuring phase if the distortion exceeds the threshold level.

3,591,720

METHOD OF SYNCHRONIZING A RECEIVER

Friedrich-Ernst Othmer, Nurnberg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,317
Claims priority, application Germany, Oct. 26, 1968, P 18 05 463.2
Int. Cl. H04l 7/08; H04j 3/06
U.S. Cl. 178—69.5 R **1 Claim**



A method for synchronizing a receiver to a bitstream which is divided into blocks having a constant number of bits, each block having at least two different synchronizing bits arranged in synchronization-bit pattern periodically repeated from block to block, which method includes the steps of comparing a first divisional sequence consisting of a series of bits lying spaced apart by equal first distances with a locally generated signal until equality is found, and then comparing each bit of a second divisional sequence with the most recently selected bit of the first sequence until inequality is found.

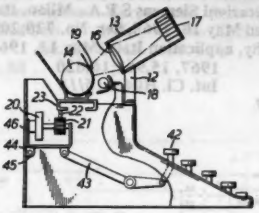
3,591,721

ELECTRICAL SIGNAL GENERATING APPARATUS

Hassan Paddy Abdel Salam, London, England, assignor to Universal Telewriters (Pty.) Ltd., Durban, Republic of South Africa

Filed Apr. 21, 1969, Ser. No. 817,923
Claims priority, application Great Britain, Apr. 24, 1968, 19404/68
Int. Cl. G06k 9/00; H04l 17/14
U.S. Cl. 178—81 **9 Claims**

Electrical symbols representative of alphanumeric characters are generated by impressing the characters in a line on a record medium carried on a platen and producing relative movement between the platen and a scanning device so that



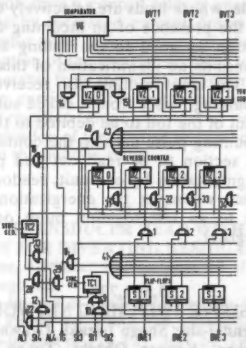
the line of characters is scanned by a plurality of electrooptical devices yielding the signals.

3,591,722

CIRCUIT ARRANGEMENT FOR DATA PROCESSING TELEPHONE EXCHANGE INSTALLATIONS WITH SYSTEMS FOR MESSAGE TRANSMISSION

Helmut Palsa, near Dachau, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 24, 1969, Ser. No. 801,427
Claims priority, application Austria, Feb. 26, 1968, 1834/68
Int. Cl. H04m 11/06
U.S. Cl. 179—2 **3 Claims**



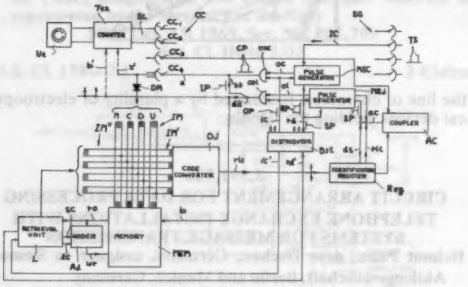
A circuit arrangement for telephone exchange installations wherein messages of different length are divided according to their length into a number of corresponding code signals of constant information volume for transmission in series over the same transmission path and consist of equally large groups of code elements, and wherein, prior to the code signals of a message, a length indicating signal indicative of the length of the message is transmitted to indicate the number of code signals corresponding to the message. First counter means presettable to an initial position by the length indicating signal and controllable to switch forward in pulse manner to a first predetermined position are used in conjunction with second counter means synchronously dependent on the switching forward of the first counter means and responsive thereto to be switched forward out of a second predetermined position. The second counter means have control outputs assigned to its counting positions that control the transmission and reception of code signals transmitted in series over the same transmission path from and to circuits individually assigned thereto. A comparator is responsive to the first counter means when the latter attains the first predetermined position to test the position of the second counter means and the received length indicating signal with regard to agreement.

3,591,723

CENTRALIZED IDENTIFICATION AND DEBITING SYSTEM FOR TELEPHONE SUBSCRIBERS

Giorgio Dal Monte, Milan, Italy, assignor to Societa Italiana Telecommunicazioni Siemens S.P.A., Milan, Italy

Filed May 10, 1968, Ser. No. 728,200
Claims priority, application Italy, May 11, 1967, May 29, 1967, 15,961;16,620
Int. Cl. H04m *15/18*
U.S. Cl. 179—7 6 Claims



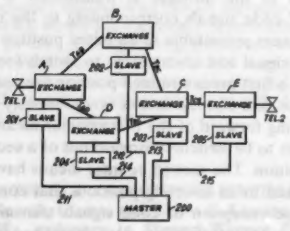
A central memory in a telephone exchange contains, in storage sections assigned to individual subscribers, binary words representing the current balances of their respective accounts together with possible classification information. An input multiple, whose leads are selectively energizable by a line finder in the presence of an incoming call, addresses the storage section assigned to the calling subscriber and concurrently transmits an identification of this subscriber to a code register. The input multiple also receives, in the case of a toll call, counting pulses from a called subscriber to indicate the amount of the toll to be debited to the calling subscriber, each counting pulse causing the contents of the addressed storage section to be read out and promptly reinscribed after augmentation by one unit; readout or augmentation is inhibited whenever the energization of the input multiple is due to an interrogation pulse occurring upon seizure of the register.

3,591,724

A LOAD SENSITIVE SWITCHING NETWORK SYSTEM

Tadao Yaku, Sendai-shi; Shogo Isizaki, Urawa-shi; Kunihiko Fujiwara, Tokyo; Kazuya Ohzeki, Tokyo, and Tatsumi Yamaki, Tokyo, all of, Japan, assignors to Japanese National Railways and Nippon Electric Company, Limited, Tokyo, Japan

Filed July 13, 1967, Ser. No. 653,212
Claims priority, application Japan, July 15, 1966, 41/46255
Int. Cl. H04g *3/56*
U.S. Cl. 179—18 EA 4 Claims



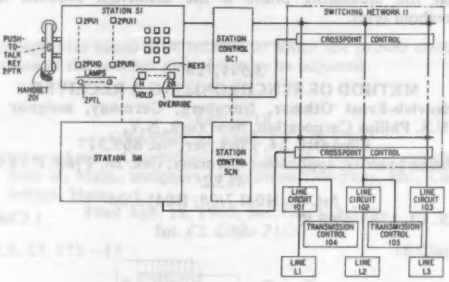
A plurality of common control automatic switching offices are each provided with an "exchange-trunk information" unit for deriving exchange-trunk or load information representing the load or capacity of the exchange and the interoffice trunk groups extending from the exchange. One of the offices is equipped with an "availability information" unit for translating the exchange-trunk information sent from all the exchange-trunk information units into availability information representing whether the exchanges and the interoffice trunk line groups are available for new calls. Each office is further provided with means responsive to the availability information for controlling the establishment of the connection.

3,591,725

SHARED USAGE OF KEY TELEPHONE SYSTEM LINE CIRCUITS

Charles E. Morse, Holmdel; John P. Smith, Holmdel, and Ralph Truby, Rumson, all of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 11, 1969, Ser. No. 840,905
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 AD 9 Claims



A key telephone system is arranged to provide access for any number of key telephone stations to any number of line circuits. When two or more stations are selectively connected to the same line circuit, the transmission capability of each such station is placed under control of a push-to-talk key at that station. The line circuit is associated with a selector for scanning each such connected station sequentially and for providing exclusive transmission capability to a first detected station having an operated push-to-talk key. On simultaneous connections to certain line circuits, the enabling of an override key at any of the connected stations provides unlimited transmission capability from that station without regard to the operational status of the push-to-talk key.

3,591,726

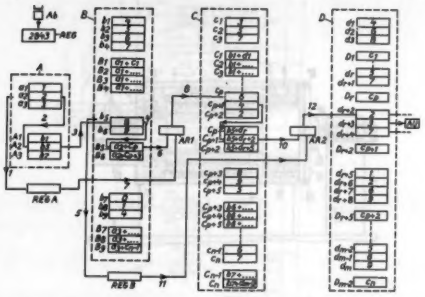
METHOD OF TRANSLATION BETWEEN A SUBSCRIBER DIRECTORY NUMBER AND A SUBSCRIBER EQUIPMENT NUMBER IN A TELECOMMUNICATION SYSTEM

Nils Herbert Edstrom, Friherregatan, and Goran Anders Henrik Hemdal, Bollmoravagen, both of, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 25, 1968, Ser. No. 770,511
Claims priority, application Sweden, Nov. 23, 1967, 16110
Int. Cl. H04q *3/47*
U.S. Cl. 179—18 ET 4 Claims

A method is disclosed for translations between a subscriber directory number consisting of a number of digits and a subscriber equipment number in a telecommunication equipment. There is a plurality of digit store cells for storing all possible digits which can occur in the different digit positions. The digit store cells with the lowest digit positions are directly associated to the subscriber equipment numbers. Address conversion cells each associated with a digit store cell contain a sum of two addresses, the address of a digit in the next higher digit position and the address of a digit in the next lower digit position. Upon translation in a first direction from the subscriber directory number to the subscriber equipment number a logical operation is carried out between

the sum and the first address in order to obtain the address of the digit in the next lower digit position and upon translation in a second direction from the subscriber equipment number to the subscriber directory number a logical operation is carried out between the sum and the second address in order to obtain the address of the digit in the next higher digit position. Upon translation in the first direction a comparison of



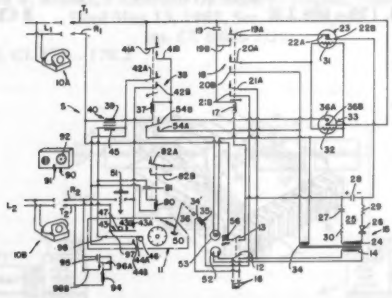
the digits in the first direction a comparison of the digits in the subscriber directory number is carried out with said digits in said digit store cells so as to find the address conversion cells and upon translation in the second direction a subscriber number digit is indicated which is found in the respective digit store cell whose address is obtained by the logical operation.

3,591,727

AUTOMATIC REROUTING SYSTEM FOR TELEPHONE SUBSCRIBER STATION

Walter H. Shaw, 600 N.W. 196th St., Miami, Fla.

Filed Dec. 10, 1968, Ser. No. 782,636
Int. Cl. H04m *3/54*
U.S. Cl. 179—18 **4 Claims**



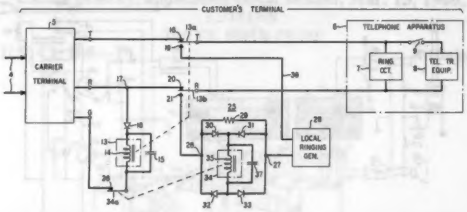
A subscriber station is provided with equipment which, in response to an incoming call on one of plural remote lines to that station, holds that line, transmits over another line to that station the dialing code of a preselected remote station, using a known type of automatic dialing unit connected to the circuitry of the subscriber station, and completes at the subscriber station a coupling link between said remote lines for communication between and the remote station of origin of the call and the preselected remote station. The subscriber has complete control in rerouting of calls directed to his station and may change the rerouting destination to suit his needs.

3,591,728

LOCAL RINGING AND RING-TRIP RELAY FOR CARRIER TERMINAL

Michael J. Birck, Clarendon Hills, Ill., assignor to Western Electronics Development Corporation, San Anzelo, Tex.

Filed Feb. 11, 1966, Ser. No. 526,785
Int. Cl. H04m *1/00, 3/06*
U.S. Cl. 179—84 **3 Claims**



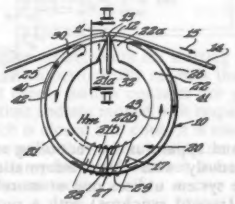
A telephone subscriber's terminal having a telephone apparatus and a transmitter and receiver carrier terminal unit adapted to be connected by a signal transmission line to a central office terminal. Relay actuated transfer contacts interconnecting the telephone apparatus and the carrier are actuated in response to a central office-produced ringing signal to disconnect the telephone apparatus from the carrier and to connect it to a local ringing generator for signalling the incoming call. When the telephone apparatus is transferred from its high impedance onhook state to its relatively low impedance offhook state a control relay is energized through a rectifier bridge by increased current drawn from the local ringing generator, and energization of the control relay results in actuation of the transfer contacts to disconnect the telephone apparatus from the local generator and to connect it back to the carrier. A resistance connected across terminals of the rectifier bridge provides a voltage drop that prevents energization of the control relay when the telephone apparatus is on the onhook state.

3,591,729

MAGNETIC TRANSDUCER HEAD WITH AUXILIARY MEANS FOR DIVERTING RESIDUAL FLUX

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of application Ser. No. 835,017, Aug. 20, 1959, now Patent No. 3,382,325, dated May 7, 1968, and a continuation-in-part of 126,121, July 24, 1961, now Patent No. 3,334,192, dated Aug. 1, 1967. This application Mar. 23, 1966, Ser. No. 536,869
Int. Cl. G11b *5/10, 5/12*
U.S. Cl. 179—100.2 C **35 Claims**



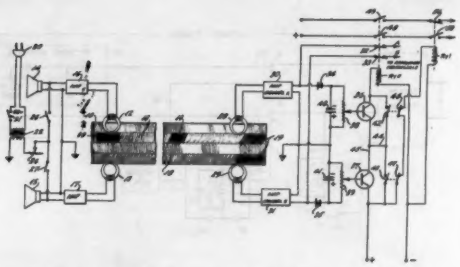
A magnetic head is shown having auxiliary core material in a substantially unstressed condition with very low direct current coercivity and located within the working magnetic core for diverting magnetic flux due to residual magnetization of the main core of the head away from the record medium path. Crossfield magnetic heads, offset pole magnetic heads, and composite core magnetic heads with windings for different frequency ranges are also disclosed.

3,591,730

AMPLITUDE SENSITIVE MAGNETIC MARKING AND SELF-MUTING MARK SENSING SYSTEM

Daniel C. Chang, 1 Roosevelt Road, Sec. 1, Taipei, Taiwan, China

Filed Jan. 31, 1968, Ser. No. 702,014
Int. Cl. G11b 15/06
U.S. Cl. 179—100.2 9 Claims



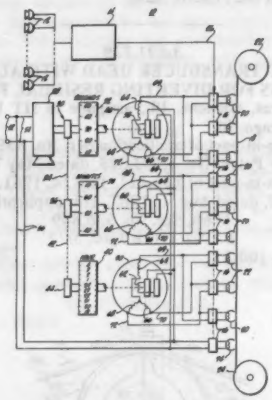
A record receiving medium is provided with saturated magnetic markings to serve as control signals for a record recorder and reproducer. The record recorder and reproducer is provided with means to mute the output of the reproducer at the time the control signals are received.

3,591,731

METHOD AND APPARATUS FOR RECORDING REAL TIME SUPERIMPOSED ON OTHER INFORMATION

William V. Stancil, Hollywood, Calif., assignor to Leigh Products, Inc., Coppersville, Mich.

Filed Sept. 23, 1968, Ser. No. 761,712
Int. Cl. G11b 27/10
U.S. Cl. 179—100.2 MD 19 Claims



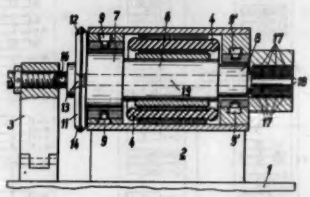
A method and apparatus for recording real time information simultaneously with other information signals to be recorded. The system utilizes one or more self-synchronous "generators" (record synchros) with a recording apparatus to generate real time signals which are recorded on a recording medium together with primary information signals to be recorded. A corresponding number of self-synchronous "motors" (reproduce synchros) are utilized with a playback apparatus to "read" the previously recorded real time information and to reproduce this information by driving a time display device associated with the playback apparatus. The primary information signals and the real time signals are recorded in different frequency bands with suitable dividing networks being provided with the record and playback mechanisms.

3,591,732

QUICK REMOVAL MAGNETIC HEAD-WHEEL ROTOR ASSEMBLY

Rudolf Prochnow, Darmstadt-Eberstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Dec. 26, 1968, Ser. No. 786,872
Claims priority, application Germany, Dec. 27, 1967, P 15 24 842.7
Int. Cl. G11b 5/50
U.S. Cl. 179—100.2 5 Claims



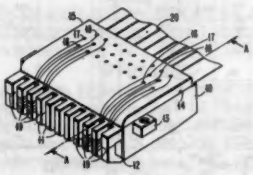
A head-wheel, carrying recording and pickup heads for a magnetic tape recording and playback system, is mounted on the rotor shaft of a drive motor, together with signal transfer rotary transformer coils to constitute a rotor assembly, which can be, as a unit, axially separated from the stator of the drive motor for the rotor assembly. Manufacturing tolerances permit assembly of any such rotor assembly into any stator, and therefore permit easy and simple substitution of a replacement rotor assembly when an operating rotor has reached a stage where the heads are worn and require repiacement. The rotor assembly is axially stepped to permit easy axial positioning of the rotor into the supporting bearings, and to permit easy removal therefrom.

3,591,733

MAGNETIC COUPLING COMPENSATION MEANS FOR A MULTIELEMENT MAGNET HEAD

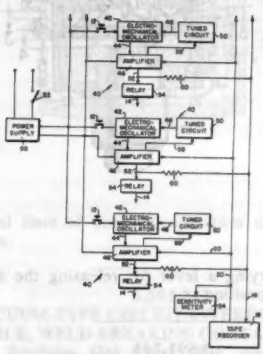
Louis E. Pflughaupt, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1969, Ser. No. 828,547
Int. Cl. G11b 5/44
U.S. Cl. 179—100.2 K 8 Claims



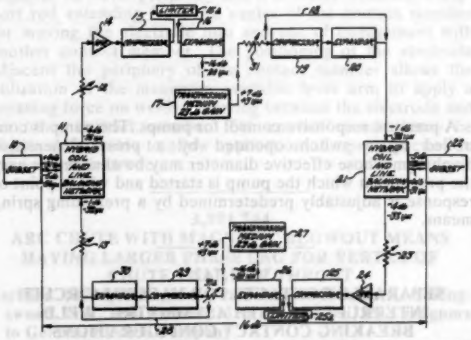
An arrangement for winding the coils of multigap magnetic heads to attenuate readback crosstalk between multiple tracks. A bifilar read coil, both filaments being connected together to provide opposite phases, is supplied on each element forming a gap of the multigap head. Additionally, each filament of the coil is separately wound on a different one of the adjacent elements out of phase with the leakage flux coupling. The resultant three-terminal winding is connected to a center-tapped differential amplifier. Hence, a deliberate one-sided crosstalk overcompensation results in a common mode coupling signal reduced in that the common mode rejection of the differential amplifier attenuates the net coupling signal.

3,591,734
A SYSTEM FOR SELECTIVELY CONTROLLING MULTIPLE OPERATIONS
Don W. Abbott, Indianapolis, Ind., assignor to Recorded Sales Visual Presentations, Inc., Indianapolis, Ind.
Filed June 10, 1968, Ser. No. 735,629
Int. Cl. G11b *23/36*
U.S. Cl. 179—100.2 S 3 Claims



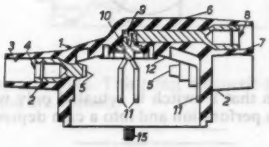
A system for the recording and playback of a tape record in which a plurality of relay switches are operated to control a corresponding plurality of electricaLly operated components. A console is provided having pushbutton switches coupled to operate oscillators which in turn energize the relay switches. The oscillator outputs are also coupled to a tape recorder for making a recording of the sequence and duration of pushbutton switch closures. The output of the tape recorder is coupled back to the oscillators so that when the recorder is played back the relay switches are closed in the same sequence and for the same duration as when the pushbutton switches are manually operated. The contacts of the relays may be used to close circuits to control lighting, slide projection, and other desired functions.

3,591,735
ANALOG VOICE PROCESSING FOR A TRANSMISSION SYSTEM
Fred A. Brooks, 5 Emerson Gardens, Lexington, Mass.
Filed May 13, 1968, Ser. No. 728,681
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.2 2 Claims



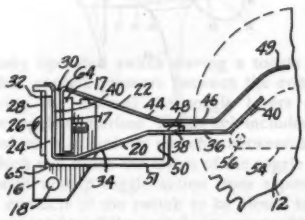
Analog voice processing for a transmission system wherein the talker volumes applied to the transmission medium is regulated with a concurrent adjustment of the volume at a preselected level to secure a desired singing margin in the system.

3,591,736
INTERNAL COMBUSTION ENGINE IGNITION DISTRIBUTOR CAP WITH IMPROVED CEMENT TERMINAL CONNECTOR MEANS
Ronald Arthur Ernest Morgan, Dunstable, Bedfordshire; Colin George James Lock, Bletchley, Buckinghamshire, and Rex Harold Robinson, Redbourn, Hertfordshire, all of, England, assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 2, 1970, Ser. No. 15,751
Claims priority, application Great Britain, Mar. 13, 1969, 1,3181/69
Int. Cl. H01h *19/00*
U.S. Cl. 200—19 4 Claims



An internal combustion engine distributor cap has an H.T. input terminal in the top of the cap, and a central contact member, which projects within the cap is electrically connected to the inner end of the input terminal, and secured in the cap, by a mass of conductive cement formed from a mixture of epoxy resin and iron powder.

3,591,737
SWITCH MECHANISM FOR ELECTRIC SPRING WOUND CLOCK
Chester B. Marble, and Harry Albinger, Jr., both of Ashland, Mass., assignors to General Electric Company
Filed Nov. 29, 1968, Ser. No. 779,883
Int. Cl. H01h *7/08, 1/18*
U.S. Cl. 200—35 4 Claims

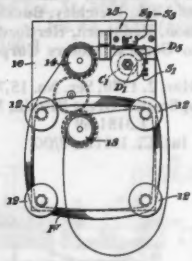


A switch contact arrangement for starting and stopping an electric motor which periodically rewinds the main spring of a spring wound clock. Switch contacts are positioned at an angle to each other and are moved with respect to each other so that the switch is closed and contact is made at one of the ends of said contacts, the contacts slide on each other, and then the switch is opened and contact is broken at the opposite ends of the contacts.

3,591,738
MECHANISM FOR THE TIME CONTROL OF ELECTRIC SWITCHES
Edward Wilkinson, Pavement Pocklington, York, Yorkshire, England
Filed Dec. 2, 1969, Ser. No. 881,434
Int. Cl. H01l *43/08*
U.S. Cl. 200—46 6 Claims

A controlling or programming mechanism in which switches are controlled by the movement of feeler pins, this

movement being controlled both by perforations through a moving tape, and also by depressions in cams, the arrangement being such that a switch is actuated only when its pin passes through a perforation and into a cam depression.

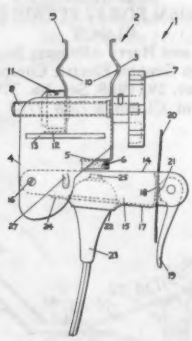


3,591,739

SWITCH ACTUATOR MECHANISM FOR USE WITH BED-RIDDEN PATIENTS

Henry Bruce Kenton, 31 Hall Road, Sawyer Bay, Dunedin, Otago, New Zealand

Filed Apr. 17, 1969, Ser. No. 817,046
Int. Cl. H01h *35/00, 3/00*
U.S. Cl. 200—52 **8 Claims**



A switch actuator for use with bedridden patients to operate, upon excessive movement of the patient, the actuator having a switch carrying member supported on a rail of a bed, a strap fixed to record the movement of a patient in bed and engaged with the operating arm of the switch carrying unit so that when the patient rises from the recumbent position or otherwise moves excessively in the bed, the switch will be operated.

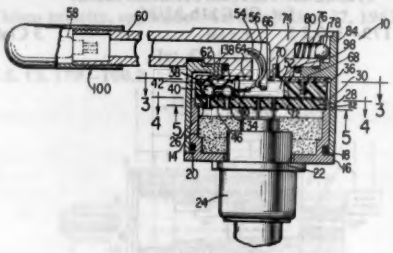
3,591,740

SELECTOR SWITCH ASSEMBLY

Wilhelm K. Kolster, Michigan City, Ind., assignor to Meridian Industries, Inc.

Continuation-in-part of application Ser. No. 681,406, Nov. 8, 1967. This application Jan. 27, 1969, Ser. No. 814,220
Int. Cl. H01h *21/78*
U.S. Cl. 200—61.27 **9 Claims**

A switch for automotive turn signals, and the like, in which a plurality of prearranged resiliently biased electrical contacts are carried by a rotatable member and are adapted to engage selective contacts electrically to associated circuit means such as a printed circuit. The switch mechanism is contained within a housing and has a detent-positioned operating arm carrying a lever for releasing the arm to a selected operating position.

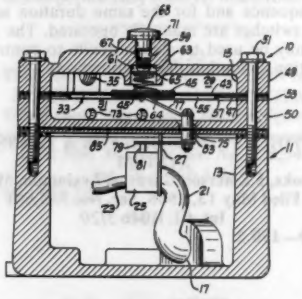


3,591,741

PRESSURE RESPONSIVE LIQUID LEVEL PUMP CONTROL

Fred E. Tutthill, Grafton, Ohio, assignor to American Crucible Products Co., Lorain, Ohio

Filed Mar. 13, 1969, Ser. No. 806,842
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 **8 Claims**



A pressure responsive control for pumps. The pump is controlled by a switch operated by a pressure sensitive diaphragm whose effective diameter may be changed to vary the pressure at which the pump is started and whose point of response is adjustably predetermined by a preloading spring means.

3,591,742

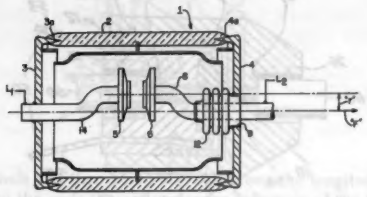
SEPARABLE CONTACTS FOR VACUUM CIRCUIT INTERRUPTERS WITH ASYMMETRIC WELD-BREAKING CONTACT CONFIGURATIONS

Richard L. Hundstad, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 7, 1968, Ser. No. 765,390
Int. Cl. H01h *33/66, 1/12*
U.S. Cl. 200—144 **5 Claims**

A vacuum-type circuit interrupter is provided having separable contacts with an asymmetric arrangement, or con-

figuration, which will aid in breaking welds by accomplishing a tearing, or blending action upon the separable contacts at



the initial time of contact separation during the opening operation.

3,591,743

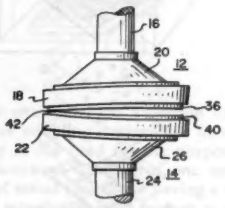
VACUUM-TYPE CIRCUIT INTERRUPTER WITH FLEXIBLE, WELD-BREAKING CONTACT STRUCTURE

John W. Ranheim, Oak Creek, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Nov. 13, 1968, Ser. No. 775,428

Int. Cl. H01h *33/66, 1/66*

U.S. Cl. 200—144 B **7 Claims**



A contact member for a vacuum-type circuit interrupter having a ring-shaped electrode joined to the contact member adjacent its outer periphery and a movable conductive support rod extending from the center of the contact member for moving the electrode into and out of engagement with another contact member. The positioning of the electrode adjacent the periphery of the contact member allows the utilization of the maximum available lever arm to apply a breaking force on welds occurring between the electrode and the other contact member. The contact member may be slightly deformable to allow application of a prying action to the welded electrode.

3,591,744

ARC CHUTE WITH MAGNETIC BLOWOUT MEANS HAVING LARGER PHASE LAG FOR VERTEX OF CHUTE THAN THE THROAT

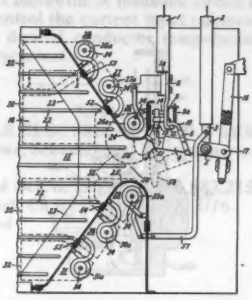
Gerhard Frind, Glenolden, Pa.; Rudolf Hunziker, Collingswood, N.J., and Richard M. Korte, Media, Pa., assignors to General Electric Company

Filed May 26, 1969, Ser. No. 827,720

Int. Cl. H01h *33/18*

U.S. Cl. 200—147 R **5 Claims**

Discloses an arc chute for an alternating current circuit breaker which comprises a plurality of electromagnets for developing magnetic fields in different parts of the chute. The magnetic field developed in and beyond the vertex region of the chute has a much higher phase lag with respect to arc current than the magnetic field developed in the throat



region of the arc chute. This latter magnetic field is nearly in phase with the arc current.

3,591,745

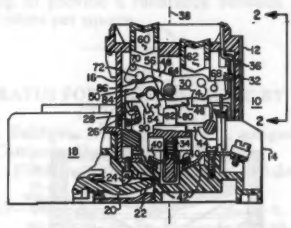
MANUALLY OPERATED TOGGLE ACTING SWITCH HAVING A JOB FUNCTION LEVER

Jordan F. Puetz, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 6, 1970, Ser. No. 9,205

Int. Cl. H01h *3/00*

U.S. Cl. 200—153 **7 Claims**



A manually operated switch having a toggle mechanism which applies positive pressure between the contacts of the switch during the interval the toggle levers are passing through the toggle centerline. The switch includes a jog function lever which is selectively movable between an operative position which will cause the levers of the toggle mechanism to return with a snap toggle action from a position which causes the contacts of the switch to be closed to a position wherein the contacts of the switch are open when a manual force on the ON button or lever is removed when the jog function lever is at one position and which will permit the toggle mechanism to move and remain in the position whereat the contact of the switch remain closed after the manual force which is used to actuate the ON button or lever is removed.

3,591,746

CIRCUIT CONTROL SWITCH MEANS WITH AXIALLY ADJUSTABLE CAM

William E. Engelhard, Apalachin, N.Y., assignor to Pyro-Sew Instruments, Inc., North Arlington, N.J.

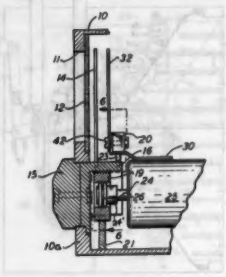
Filed May 8, 1968, Ser. No. 727,509

Int. Cl. H01h *3/42, 19/62*

U.S. Cl. 200—153 **4 Claims**

Can and switch means for control of circuits, such that, on setting or aligning the cam relative to a point on a scale, a switch member will be rotated to change the position thereof, relative to the cam, to actuate the switch at the set scale

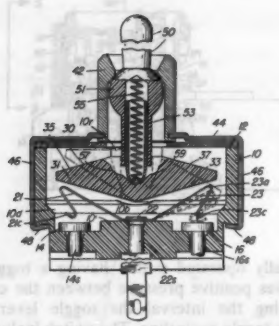
point, and thus control a circuit. The cam is adjustable along its axial dimension so that if one portion of it is worn, a new portion can be brought into contact with the cam follower without changing the cam.



3,591,747
LEVER OPERATED SWITCH WITH TILTABLE CONTACT ACTUATOR AND FLEXIBLE CONTACTS

John J. Dennison, Southington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Dec. 29, 1969, Ser. No. 888,294
Int. Cl. H01h 3/00
U.S. Cl. 200—153 9 Claims



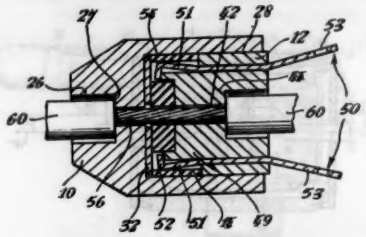
A lever operated electric switch has a rocker that is tilted to one side or the other from an intermediate neutral position by movement of the lever. The rocker engages one arm or the other of a leaf spring type of contact member causing engagement with one or another fixed contact. The ends of the arms are reversely bent doubly into S-sahpe so that the extremity presents a longitudinal surface which wipes over the fixed contact surface. The ends are also bifurcated and laterally dished into trough shape.

3,591,748
ELECTRIC SWITCH

Brian Astbury Holden, Washington, England, assignor to Burgess Mirco Switch Company, Limited, Gateshead, Durham County, England

Filed Mar. 12, 1969, Ser. No. 806,453
Claims priority, application Great Britain, Mar. 28, 1968, 15,023/68
Int. Cl. H01h 17/08
U.S. Cl. 200—161 14 Claims

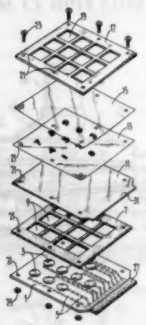
A switch is constructed with inner and outer members that support the contact elements of the switch and that sandwich between them a rubber gasket having apertures that form totally enclosed spaces in which the contact elements are brought into engagement when an operating force is applied to compress the gasket, beyond an initial prestressed state, by a Bowden cable on which the switch is mounted.



3,591,749
PRINTED CIRCUIT KEYBOARD

James Martin Comstock, Livermore, Calif., assignor to The Singer Company

Filed May 12, 1969, Ser. No. 823,658
Int. Cl. H01h 9/16, 3/12
U.S. Cl. 200—167 R 8 Claims



A printed circuit keyboard having contacts thereon with leads from the contacts passing through the board and connected to conductors on the underside of the board. A ground plane in the form of a conductive sheet is positioned above the contacts and biased out of contact therefrom. This sheet could be Mylar plated with nickel. The Mylar sheet is positioned over an apertured member aligned with the contacts to provide the biasing. The Mylar is sufficiently taut so that only one contact can be positioned against the depressed Mylar sheet at one time. A cellophane or other member can be placed over the Mylar and aligned with the apertures to provide numeric indicators for the keyboard.

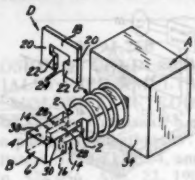
3,591,750
STOPPER PLATE MOUNTING FOR PUSHBUTTON SWITCH

Masao Ohkita, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1970, Ser. No. 19,976
Claims priority, application Japan, Apr. 10, 1969, 44/32,695
Int. Cl. H01h
U.S. Cl. 200—172 R 8 Claims

A pushbutton switch comprises a pushrod having communicating vertical and longitudinal channels, the stopper plate against which the biasing spring is adapted to operate having

downwardly extending arms with inwardly extending parts, the inwardly extending parts being passable through the vertical channels and then being movable along the longitudinal channels to the ends thereof under the influence of the biasing spring.

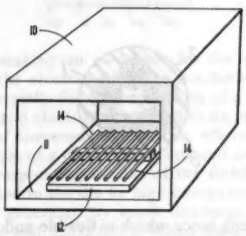


3,591,751

BROWNING APPARATUS FOR USE IN A MICROWAVE OVEN

Costas E. Goltsos, Weston, Mass., assignor to Teckton, Inc., Waltham, Mass.

Filed Sept. 26, 1969, Ser. No. 861,418
Int. Cl. H05b *9/06, 9/04*
U.S. Cl. 219—10.55 **9 Claims**



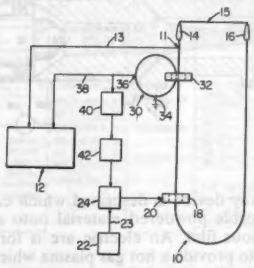
In a microwave oven wherein a portion of food is to be cooked, microwave coupling devices are located in contact or close proximity to the food for the purpose of browning the food. The microwave devices, in one embodiment, include a plurality of metal rods, each having a length that is a multiple of a half wavelength with respect to the microwave energy within the oven. The microwave devices effectively transform the microwave energy into thermal energy in which form the energy causes the browning of the food contained therein.

3,591,752

APPARATUS FOR MEASURING THE CONDUCTOR AND SHIELD TEMPERATURE OF HIGH VOLTAGE CABLE

Jorge G. Valdes, Wilmington, Del., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 8, 1969, Ser. No. 883,207
Int. Cl. H05b *1/02, 5/00*
U.S. Cl. 219—10.77 **12 Claims**



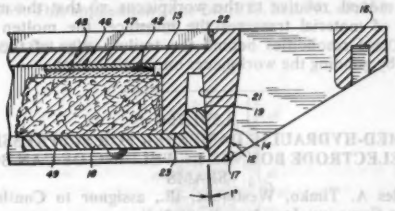
A temperature-sensitive device is placed in contact with the conductor of a measuring loop in order to indirectly measure the temperature in the conductor of a cable undergoing a load cycle test. The temperature of the metallic shield of the cable is measured directly with a temperature-sensitive device in contact therewith. A feedback circuit is provided to automatically control the current input necessary to achieve and maintain a desired conductor temperature throughout the entire load cycle test.

3,591,753

PLANAR ELECTRICAL FOOD WARMER

William J. Gartner, Schaumburg, Ill., assignor to Kem Industries, Inc.

Filed Dec. 8, 1969, Ser. No. 883,215
Int. Cl. H05b *3/68, 3/06, 3/16*
U.S. Cl. 219—464 **3 Claims**



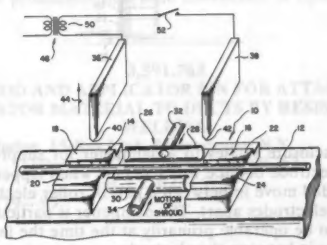
An electrical food warmer is provided having a hermetically sealed shell made of a thermoplastic material. The heating unit which underlies the flat top of the shell is a sheet having an insulating layer coated with an electrically conductive coating to provide a resistance between about 25 and about 100 ohms per square.

3,591,754

APPARATUS FOR STRIPPING WIRE BY WIRE-IN-CIRCUIT HEATING

Charles L. Baldwin, Jr., Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1969, Ser. No. 795,246
Int. Cl. H02g *1/12*
U.S. Cl. 219—50 **2 Claims**



The disclosure relates to a method and an apparatus for removing insulation from an electrical wire by electrical resistance heating of the wire to vaporize the insulation, the entire operation being conducted in an inert atmosphere for those applications where oxidation of the bare electric wire would be harmful.

3,591,755

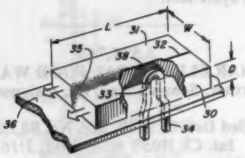
FUSION BONDING

Robert Holbrook Cushman, Princeton, N.J., assignor to Western Electric Company, New York, N.Y.

Filed June 6, 1969, Ser. No. 831,164
Int. Cl. H05b *1/00*
U.S. Cl. 219—50 **8 Claims**

Workpieces fabricated from lead, or other metallic materials having substantially similar characteristics, are fusion

bonded by first abutting the workpieces to define an interface therebetween, and then inserting a heated bonding tool into the workpieces, at the interface, to create a localized zone of molten material about the bonding tool. The tool is



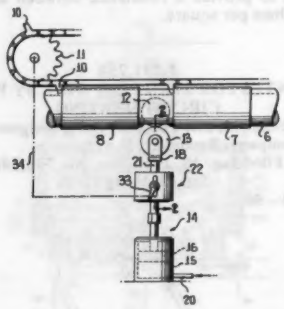
then moved, relative to the workpieces, so that the molten zone of material traverses the interface, the molten zone cools and resolidifies behind the trailing edge of the tool, thereby gonding the workpieces one to the other.

3,591,756

TIMED-HYDRAULIC DAMPENER FOR SUPPRESSION OF ELECTRODE BOUNCE IN WELDING OF CAN BODY SEAMS

Charles A. Timko, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,518
Int. Cl. B23k *1/16, 11/06*
U.S. Cl. 219—66 **9 Claims**



This disclosure relates to a dampener for suppressing the normal electrode bounce which occurs when lapped portions to be welded move in between a pair of roller electrodes and force the electrodes apart. The dampener is particularly constructed to be operable primarily at the time the lapped portions move in between the electrodes.

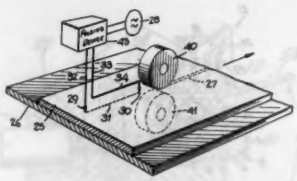
3,591,757

WELDING BY HIGH FREQUENCY CURRENT PENETRATION

Wallace C. Rudd, Larchmount, N.Y., assignor to AMF Incorporated

Continuation-in-part of application Ser. No. 510,502, Nov. 30, 1965, now abandoned , and a continuation-in-part of 792,304, Jan. 2, 1969, now abandoned, and a continuation-in-part of 792,644, Jan. 21, 1961, now abandoned. This application Jan. 6, 1970, Ser. No. 938
Int. Cl. B23k *11/02*
U.S. Cl. 219—67 **79 Claims**

Methods and apparatus for welding together portions of a metal strip or strips and using high frequency current which penetrates into the metal comprising holding the portions closely adjacent, causing the current to flow in the same direction along both portions and to flow in the opposite direction along a proximity conductor extending along and in



close proximity to the portions, and when welding temperature has been reached, forging the heated portions together.

3,591,758

FLAME-CUTTING TORCH

Reginald Clucas, 234 Northgate Cottingham, Hull, Yorkshire, England

Filed Oct. 14, 1969, Ser. No. 866,311
Claims priority, application Great Britain, Oct. 30, 1968, 51404/68
Int. Cl. B23k *35/02*
U.S. Cl. 219—70 **2 Claims**

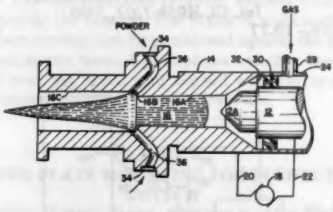
A flame-cutting lance which is flexible and composed of a plurality of multistrand steel wires forming a hollow core within an outer sheath of plastics material, oxygen being supplied to flow through the hollow core and an electric current applied to the steel wires when the lance is in use.

3,591,759

METHOD OF DEPOSITING HEAT FUSIBLE MATERIAL AND APPARATUS THEREFOR

Mille Stand, New York, N.Y., assignor to Sealectro Corporation

Continuation-in-part of application Ser. No. 581,594, Sept. 23, 1966, now abandoned, which is a Continuation-in-part of application Ser. No. 536,229, , now abandoned. This application June 4, 1969, Ser. No. 835,876
Int. Cl. B23k *9/16, 9/04*
U.S. Cl. 219—76 **12 Claims**



A plasma spray device is described which can be used to deposit heat fusible powdered material onto a substrate to form a continuous film. An electric arc is formed between two electrodes to provide a hot gas plasma which is projected through a nozzle. Powdered fluent material is added to the laminar flowing plasma and is carried on the surface of the plasma during the passage of the plasma through an enlarged

nozzle, the powder converging at the tip of the plasma jet. The heat from the arc forms the hot plasma and the powdered material is melted so that the material coalesces to form a continuous film when it strikes the substrate.

3,591,760
ELECTROEROSION OF CONDUCTIVE WORKPIECES BY SEQUENTIALLY USED SIMULTANEOUSLY NEST-MOLDED ELECTRODES

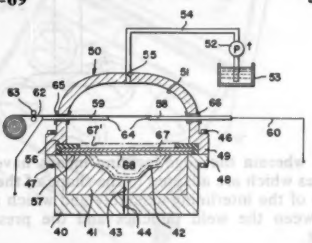
Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Japan

Continuation-in-part of application Ser. No. 508,487, Nov. 18, 1965, now Patent No. 3,512,384, and a continuation-in-part of Ser. No. 574,056, Aug. 22, 1966. This application Apr. 24, 1968, Ser. No. 723,799

Claims priority, applications Japan, June 28, 1967, Sept. 2, 1967, 42/41494, 42/56310

Int. Cl. B23p *1/04, 1/08*

U.S. Cl. 219—69 **5 Claims**



Method of making an electrode for the electrochemical machining or the electric discharge machining of a metallic workpiece, especially for the production of a number of substantially identical electrodes adapted to be used for the serial machining of numerous workpieces, wherein an electrode blank in the form of a metal sheet is placed over a die having a contour corresponding to that of the finished-body shape and is conformed to the die by high-energy-rate forming with a shock wave generated by spark discharge (see U.S. Pat. Nos. 3,208,254 and 3,232,088). When the electrode is used for the electric discharge machining of a workpiece, a thin spacing layer is applied along its surface juxtaposed with the die prior to spark forming and is thereafter removed so that the overlying metal body constitutes a rough-forming electrode designed to shape the contours initially. The finish-forming electrode may be formed simultaneously, e.g. as the spacer layer.

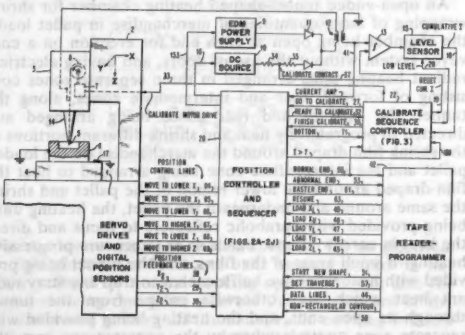
3,591,761
PATTERN AND CAVITY ELECTROEROSION BY REPEATED RASTER SCANNING

Seymour Bederman, Yorktown Heights, and Larry G. Lankford, Mahopac, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1968, Ser. No. 742,744

Int. Cl. B23p *1/12, 1/14*

U.S. Cl. 219—69 V **19 Claims**



A multiple axis machine tool control system is provided for removing layers of material from a workpiece. The system position controller repetitively moves the work element, in rectilinear parallel paths, in a scanning manner, back and forth across the workpiece between stored X- and Y-coordinate limits to remove incremental layers of material. Control of material removal in the Z-direction is dependent upon a current sensing arrangement whereby the magnitude of the current flow between the EDM work element and the workpiece is sensed and used to control the Z-direction position of the work element. The sensed current also acts to control the frequency of automatic calibration of the work element. With the EDM wire electrode stored on a reel a new section of electrode is automatically allowed to advance, during each calibration cycle, in dependence upon the amount of electrode wear.

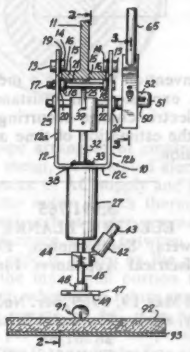
3,591,762
WELDING APPARATUS

Milton Hinden, 15 Bay Link, Massapequa, N.Y.

Continuation-in-part of application Ser. No. 797,603, Feb. 7, 1969. This application June 24, 1970, Ser. No. 49,254

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **3 Claims**



A resistance-welding apparatus is disclosed in which a welding circuit is automatically closed to produce a resistance weld responsive to the exertion of an optimum pressure of the welding pin tip against the work surface, thus to assure the production of a weld connection of optimum efficiency.

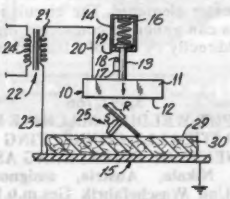
3,591,763
METHOD AND APPLICATOR PIN FOR ATTACHING INSULATOR MATERIAL TO DUCTS BY RESISTANCE WELDING

Milton Hinden, 15 Bay Link, Massapequa, N.Y.

Filed June 24, 1970, Ser. No. 49,253

Int. Cl. B23k *9/20*

U.S. Cl. 219—99 **5 Claims**



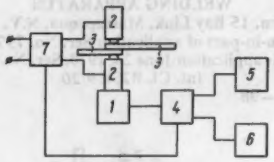
A welding pin and method of attaching the same for securing insulator material to ducts. The pin is characterized by an enlarged head portion, a shank extending at right angles to the head portion, terminating in a sharpened tip. The length of the shank is less than the radius of the head portion so that

when the pin is supported on a horizontal surface, such as a layer of insulator material disposed above a duct, the included angle between the insulator material and the plane of the head portion is less than 45°.

3,591,764
METHOD OF CHECKING METAL EXPULSION IN RESISTANCE WELDING

Jury Matveevich Taran, ul. Bolshaya Kitaevskaya 99, kv. 38, and David Solomonovich Vorona, ul. Scherbakova 51, kv. 21, both of Kiev, U.S.S.R.

Filed Feb. 24, 1969, Ser. No. 801,531
Int. Cl. B23k *9/10, 11/24*
U.S. Cl. 219—110 **7 Claims**

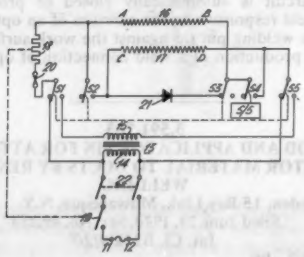


The present invention concerns a method and device for detecting metal expulsions in resistance welding wherein mechanical or electric change occurring in the welding zone are utilized for the estimation of time and quantity parameters of the expulsion.

3,591,765
ELECTRIC BLANKETS

Leonard C. Owers, Southampton, England, assignor to Dreamland Electrical Appliances Limited, Southampton, England

Filed May 19, 1969, Ser. No. 828,092
Claims priority, application Great Britain, June 17, 1968, 28761/68
Int. Cl. H05b *1/00*
U.S. Cl. 219—212 **4 Claims**



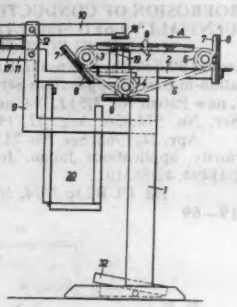
A circuit for an electric blanket or an electrically heated pad has two heater elements. The circuit is such that these heater elements can either be connected directly to a source of supply, or indirectly by way of a transformer.

3,591,766
SPOT-WELDING MACHINE FOR THERMOPLASTICALLY CONNECTING THE SEVERAL COMPONENTS OF INTERLINING ASSEMBLIES

Karl Nerold, Nikola, Austria, assignor to "Vienna" Bekleidungs-Und Waschefabrik Ges.m.b.H., Vienna, Austria

Filed Apr. 25, 1969, Ser. No. 819,323
Claims priority, application Austria, Aug. 7, 1968, A 7729/68
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **13 Claims**

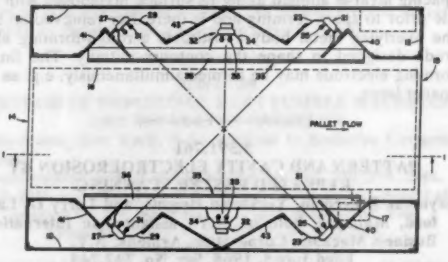
A spot-welding machine for thermoplastically connecting the several components of interlining assemblies, particularly shirt-collar interlinings, is provided which comprises a plurality of electrically heatable weld punches and a possibly likewise heatable pressplate, as well as adjustable edge-locating means for the several components of an interlining assembly, wherein the edge-locating means have the form of templates which are adapted to the shape of the several components of the interlining assembly and which are interposable between the weld punches and the pressplate of the machine.



3,591,767
RADIANT SHRINK TUNNEL

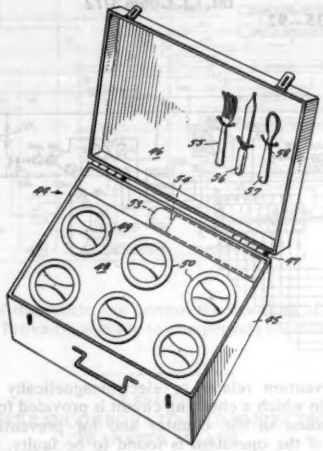
David Jeffrey Mudie, 30 Ben Machree Drive, Port Credit, Ontario, Canada

Filed June 23, 1969, Ser. No. 835,412
Int. Cl. F24h *3/00*; H05h *1/00*
U.S. Cl. 219—354 **7 Claims**



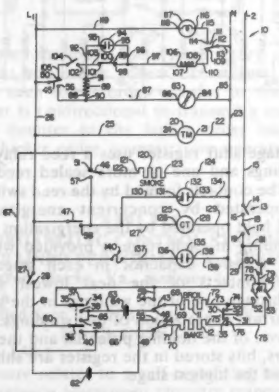
An open-ended tunnel-shaped heating chamber for shrink wrapping of large quantities of merchandise in pallet loads, the chamber being open at each end for erection on a conveyor system without the use of doors, and having electrical radiant heating units arranged in three separate zones consisting of forward, rear and intermediate zones, along the tunnel, the forward and rear zones being arranged and directed to progressively heat and shrink different portions of the shrink film draped around the merchandise on the loaded pallet and the intermediate zone being arranged to heat the film-draped around the lower region of the pallet and shrink the same around and underneath the pallet, the heating units being provided with parabolic reflectors to focus and direct the heat in narrow intense bands so as to procure progressive heating of small areas of the films, and the tunnel being provided with heat reflective baffle means to trap any stray radiant heat which may otherwise escape from the tunnel through its open ends, and the heating being provided with separate zone controls whereby the operator can vary the heat applied by each of the zones, thereby enabling the construction of a shrink tunnel without doors for incorporation in a continuous flow production line.

3,591,768
THERMAL CONTAINER KIT
Frank Torres, 87 W. Greenwich Ave., Roosevelt, N.Y.
Filed June 21, 1968, Ser. No. 740,445
Int. Cl. A21b *1/52*; F27d *11/02*
U.S. Cl. 219—387 3 Claims



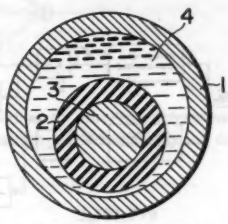
An improved Thermos container kit comprised of a plurality of Thermos bottles fitted into a case so as to provide both hot and cold foods, and each Thermos container comprising a vacuum bottle having a nozzle pouring spout.

3,591,769
ELECTRICAL OVEN COOKING AND CLEANING CONTROL SYSTEM
Siegfried E. Manecke, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 22, 1968, Ser. No. 699,433
Int. Cl. H05b *1/02*
U.S. Cl. 219—494 17 Claims



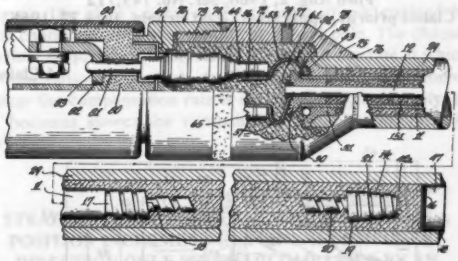
This disclosure relates to a control system for an electrical oven that permits the broil and bake heaters thereof to not only be utilized for normal cooking operations, but also for an oven-cleaning operation wherein the temperature of the oven is elevated to burn off the undesirable cooking soil and the like, the control means operating the bake heater at substantially full rated power and the broil heater at part rated power in a parallel relation thereof when the control means is set for a cleaning operation and the oven is below the cleaning temperature while operating both of the bake and broil heaters at part rated power thereof in a series relation thereof when the temperature of the oven is above the cleaning temperature.

3,591,770
HEAT GENERATING PIPE
Masao Ando, Kanagawaken, Japan, assignor to Chisso Corporation, Osako, Japan
Filed Apr. 3, 1967, Ser. No. 627,721
Claims priority, application Japan, Apr. 5, 1966, 41/21393
Int. Cl. H05b *3/40*
U.S. Cl. 219—540 4 Claims



A heat-generating pipe arrangement employs at least one pipe of ferromagnetic metal, an insulated electric conductor line connected to a source of AC supply and inserted within the pipe throughout the entire length thereof and a good heat-conductive material such as water, sea water or the like which exists in the clearance space between the conductor line and the pipe. The pipe is heated by the alternating current flowing through the inner wall portion thereof on account of the skin effect, which is a return current from the conductor line to the source of AC. The heat-conductive material is effective in preventing the temperature rise of insulating-material covering the conductor line and reduces the cost of heat-generating pipe per unit of heat generation.

3,591,771
ELECTRIC HEATERS
John F. Volker, Pittsburgh, Pa., assignor to Emerson Electric Company, St. Louis, Mo.
Division of Ser. No. 755,297, Aug. 8, 1968, Pat. No. 3,521,352.
Filed Jan. 22, 1970, Ser. No. 10,684
Int. Cl. H05b *3/10*
U.S. Cl. 219—553 5 Claims



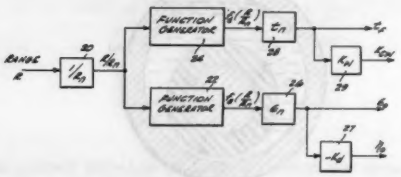
An electric heater comprising a terminal section including a terminal rod disposed in electrically insulated concentric relation within a metal tube, and a pair of concentric coiled resistors, the outer resistor having an end electrically connected to the tube and the inner resistor having an end electrically connected to the terminal rod. The terminal section, with attached resistors, are then disposed in coaxial relation within a tubular metal sheath and refractory material is in-

serted within the sheath for electrical insulation. The sheath is hermetically sealed at one end by a plug welded in the sheath, and at the other end by a terminal housing which is welded to the sheath. The terminal housing contains electrical connections with the terminal rod and metal tube, and such connections include looped portions to accommodate expansion and contraction.

3,591,772
COMPUTER CIRCUIT

William E. McAdam, Jr., Thousand Oaks, and Roy G. Clutterbuck, Los Angeles, both of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 24, 1968, Ser. No. 739,420
Int. Cl. G06g *7/80, 7/26*
U.S. Cl. 235—61.5 E **27 Claims**

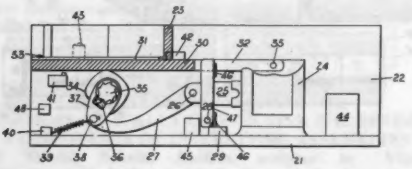


A computer circuit for generating signals related to the ballistics of a plurality of projectile or ammunition types, the signals including time of flight, superelevation, and ballistics drift signals. The computer includes a plurality of parallel channels, including a first adjustable multiplier circuit, which operates on the range information by a selected ballistics normalizing transfer function to generate an individual normalized range signal for a selected individual one of the plurality of projectile or ammunition types, a function generator coupled to receive and operate on the normalized range signals with a nonlinear transfer function common to the ballistics of all of the projectile type for generating an exponential function signal related to the selected projectiles, and a second adjustable multiplier circuit coupled to the function generator for multiplying the function signal by a selected individual unnormalizing transfer function for the selected projectile type generating signals related to the ballistics of the projectile, such as superelevation and time of flight.

3,591,773
CARD READER

John Covell Collier, Farnworth, and David William Rickards, Stanmore, both of, England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 2, 1968, Ser. No. 749,712
Claims priority, application Great Britain, June 27, 1968, 30774/68
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.11 **4 Claims**

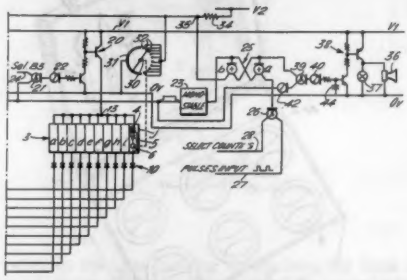


A card reader uses a solenoid-operated linkage mechanism to give a greater mechanical advantage to close a card-carrying platform against reading means with an increasing force. The platform is inclined to the plane of the reading means so that on closure the reading means are successively engaged by the card.

3,591,774
MECHANICAL COUNTERS

Manfred Huber, and Norbert Klimek, both of London, England, assignors to English Numbering Machines Limited, Enfield, England

Filed May 2, 1968, Ser. No. 726,171
Claims priority, application Great Britain, May 9, 1967, 21,395/67
Int. Cl. G06m *3/12*
U.S. Cl. 235—92 **4 Claims**

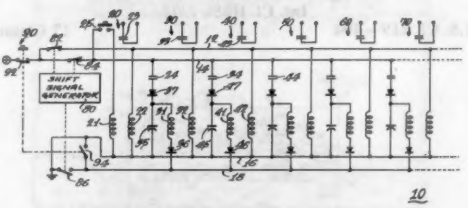


The invention relates to electromagnetically controlled counters in which a checking circuit is provided for checking the operation of the counter and for preventing further counting if the operation is found to be faulty. It includes both transistorized methods and relay methods of operation and may be applied to single counters or banks thereof.

3,591,775
SHIFT REGISTER USING SEALED REED SWITCHES

Donald P. Schulze, La Mirada, Calif., assignor to C. P. Clare & Company, Chicago, Ill.

Filed June 7, 1968, Ser. No. 735,262
Int. Cl. H03k *27/00*
U.S. Cl. 235—92 **10 Claims**



A plural stage shift register uses a reed relay including a pair of windings and one or more sealed reed switches in each stage. The contacts formed by the reed switches of each stage are operated by concurrent energization of the windings and held operated by the energization of one winding. One winding in each stage is provided with a holding potential. A transfer capacitor in each stage is charged through the contacts of the next lowest stage and is discharged through one of the windings in the same stage to obtain concurrent energization of two windings. By sequencing the removal of the holding potential and the discharge of the capacitors, bits stored in the register are shifted from the lowest stage of the highest stage.

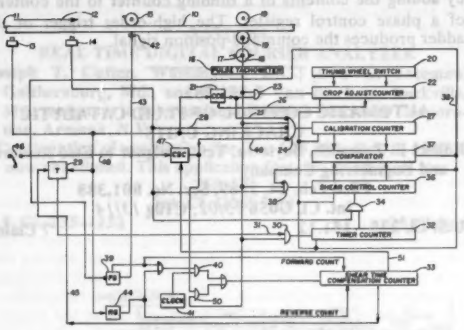
3,591,776
AUTOMATIC CROP SHEAR CONTROL SYSTEM

Robert A. Sylester, Corapolis, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1969, Ser. No. 881,650
Int. Cl. G06m *7/00*
U.S. Cl. 235—92 DN **3 Claims**

A system employing digital techniques for automatically controlling a shearing device to crop a desired length from

the trailing end of an elongated article while the article is conveyed along a longitudinal path. Two sensors determine



the ends of the article and control the counting of tachometer pulses. Provision is made to compensate for delay time of the shear.

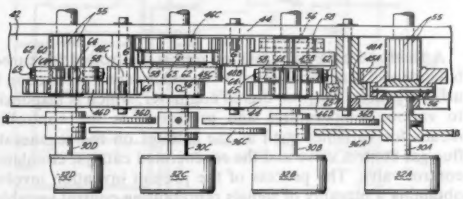
3,591,777

REGISTER INCORPORATING UNIDIRECTIONAL TRANSFER MEANS

Joel A. Naive, La Jolla, and Peter J. Van Benschoten, Rancho Santa Fe, both of, Calif., assignors to Wavetek, San Diego, Calif.

Filed June 29, 1966, Ser. No. 561,558

U.S. Cl. 235—133 **12 Claims**



In a counter assembly comprising rotary counters corresponding to successive orders of integers, the transfer means from each lower order counter to the next higher order counter is unidirectional to transmit a carry from the lower order counter to the higher order counter but to prevent the higher order counter from operating the lower order counter.

3,591,778

SELF-ORGANIZING CONTROL SYSTEM WITH CONSTRAINED PERFORMANCE ASSESSMENT

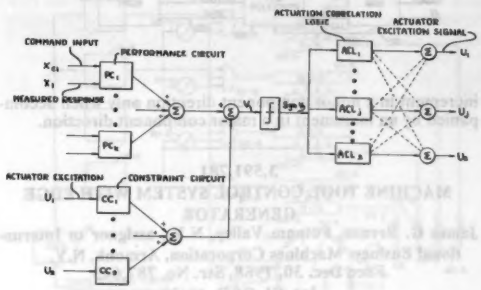
Roger L. Barron, Burke, Va., assignor to Adaptronics, Inc., McLean, Va.

Filed Sept. 16, 1968, Ser. No. 759,870

Int. Cl. G05b *13/02*

U.S. Cl. 235—150.1 **14 Claims**

The disclosure relates to a self-organizing control system having performance assessment circuitry responsive to each command signal, capable of providing an error performance term which is a summation of the signals provided by each of the performance assessment circuits. The system also includes constraint circuitry, there being one constraint circuit corresponding to each actuator excitation signal, the constraint circuit outputs being summed and subtracted from the summation of the performance assessment circuitry outputs to provide a single value signal. The single value signal is utilized to control all of the actuation correlation logic circuits which, in turn, can control the individual actuators or parameters in the plant. The constraint circuits are utilized to prevent the system from correcting too rapidly in predeter-



mined areas relative to other predetermined areas and the like, or to constrain the expenditure of control excitation resources.

3,591,779

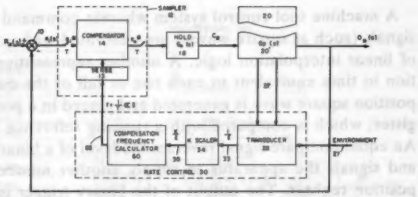
VARIABLE FREQUENCY COMPENSATION FOR SAMPLED DATA CONTROL SYSTEMS

Arthur A. Sutherland, Jr., Woburn, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 21, 1968, Ser. No. 707,268

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.1 **10 Claims**



Compensation for a sampled data control system that in effect provides a functional coupling between the compensation frequency and the plant's responsiveness to its control signal. The plant's behavioral properties are determined by the characteristic frequency of a dominant pole. The characteristic frequency is monitored and controls the rate at which compensation is applied. As the plant's response becomes faster the compensation rate is increased and, conversely, as it becomes slower the compensation rate is appropriately reduced.

3,591,780

STRAIGHT LINE GENERATOR WHICH SPECIFIES A POSITION INCREMENT IN A MINOR COMPONENT DIRECTION ONLY WHEN ACCOMPANIED BY AN INCREMENT IN THE MAJOR COMPONENT DIRECTION

Peter E. Rosenfeld, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

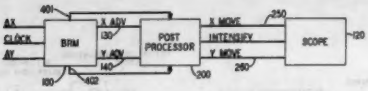
Filed Apr. 4, 1968, Ser. No. 718,805

Int. Cl. G06g *7/48*

U.S. Cl. 235—151.1 **7 Claims**

A technique for vector generation in a point-plotting system is disclosed which provides an improved approxima-

tion to the desired linear trajectory by specifying a position increment in a minor component direction only when accompanied by an increment in a major component direction.



3,591,781

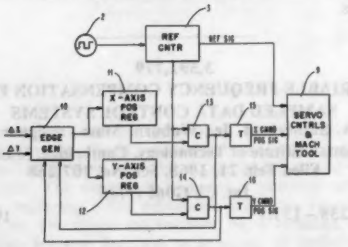
MACHINE TOOL CONTROL SYSTEM WITH EDGE GENERATOR

James G. Brenza, Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,643

Int. Cl. G05b *19/30*

U.S. Cl. 235—151.11 **19 Claims**



A machine tool control system wherein command-position signals (such as square waves) are generated without the use of linear interpolation logic. A number representing a position in time equivalent to each rise or fall of the command-position square wave is generated and placed in a position register, which is compared with a running reference counter. An equal-compare signal reverses the level of a binary trigger and signals the apparatus to supply another number to the position register. The output of the binary trigger is used to generate the command-position square wave.

3,591,782

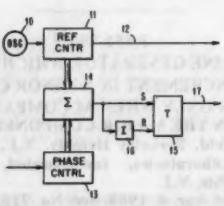
DIGITAL TO PHASE ANALOG CONVERTER

Geert H. Bouman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 791,414, Jan. 15, 1969, now abandoned. This application Oct. 31, 1969, Ser. No. 880,754

Int. Cl. G05b *19/18*; **H03k** *13/04*

U.S. Cl. 235—151.11 **10 Claims**



A digital to phase analog converter which accepts input digital data from a linear interpolator and produces a reference square wave signal for each machine tool and a command-position signal for each machine tool axis that is being controlled. Each command-position signal has a phase displacement from the reference signal that is related to the input digital data. The command-position signal is generated by adding the contents of a running counter to the contents of a phase control register. The high-order trigger of the adder produces the command-position signal.

3,591,783

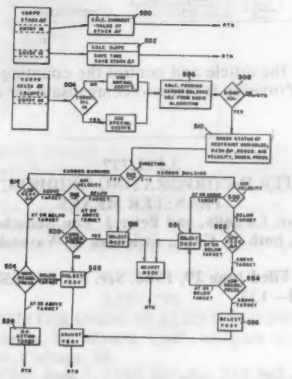
AUTOMATIC CONTROL OF FLUID CATALYTIC CRACKING UNITS

Robert E. Zumwalt, Baytown, Tex., assignor to Esso Research and Engineering Company

Filed Feb. 24, 1969, Ser. No. 801,388

Int. Cl. G05b *15/02*; **C10g** *13/14*

U.S. Cl. 235—151.12 **7 Claims**



A fluidized catalytic cracking unit is controlled for carbon balance and maximization of a secondary control function by using a general purpose digital computer, which is responsive to various temperatures and pressures, as the controlling means for variables such as the settings on the regenerator flue gas control valve and the regenerated catalyst circulation control valve. The process of the present invention involves obtaining a plurality of signals representing control variables, comparing these with the desired values for the control variables, and carrying out in a general purpose computer the calculation of a carbon adjustment factor according to the algorithm:

$$\Delta SV_n = K_r\,[\text{Abs. }(\delta T_n) + K_s]\,(\delta T_n) + K_p\left[\frac{\Delta T_n - \Delta T_{n-1}}{\Delta t}\right]$$

where each of the variables has the definition set forth in the specification.

When ΔSV_n is positive, indicating a correction for carbon-burning conditions, the desired control action is obtained by a logic sequence which determines whether either of the controlled variables is under constraint and if not, takes the control step most consistent with optimization of the secondary variable. If one or both of the controlled variables are under constraint, the logic sequence indicates the correct control step to be taken or, if no control step can be taken, indicates that none can be taken.

When ΔSV_n is negative, indicating a correction for carbon-building conditions, the logic sequence likewise allows the choice of the optimum control step to be taken or, if none can be taken, indicates this fact.

After the logic sequence based upon the algorithm has been completed, a signal is obtained to move the correct control valve (that is, make the required adjustment in the controlled variable), the signal being corrected to reflect the difference in control function (depending upon which valve is to be moved) and for the position of the valve immediately prior to movement to the new position.

By carrying out the control function of the present invention, carbon balance can be well controlled in a catalytic cracking unit while the secondary control variable (such as regenerator air velocity) can be controlled or maximized.

3,591,784

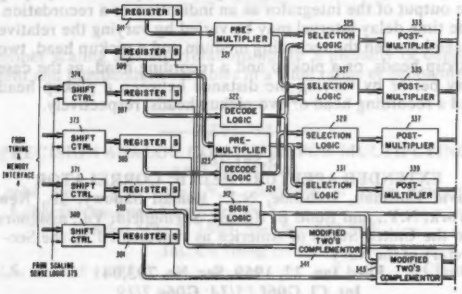
REAL TIME DIGITAL FOURIER ANALYZER

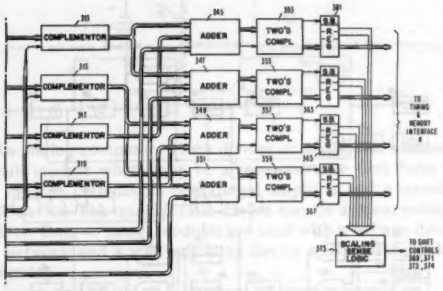
Joseph T. Cutter, Washington, D.C.; Don G. Freeman, Gaithersburg, Md., and Richard Van Blerkom, Rockville, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 673,881, Oct. 9, 1967, now abandoned. This application Oct. 17, 1968, Ser. No. 768,474

Int. Cl. G06f *7/38*

U.S. Cl. 235—152 **25 Claims**





A real time digital Fourier analyzer utilizing either the Cooley-Tukey or the Danielson-Lanczos algorithms consisting of particularly adapted hardware to facilitate the calculations of said algorithms. Specifically, the preferred embodiment utilizes hardware equally adapted to both algorithms with fixed point arithmetic, a look-ahead two's complementor, and an address generator employing three binary counters.

3,591,785

SIGNAL AVERAGING SYSTEM

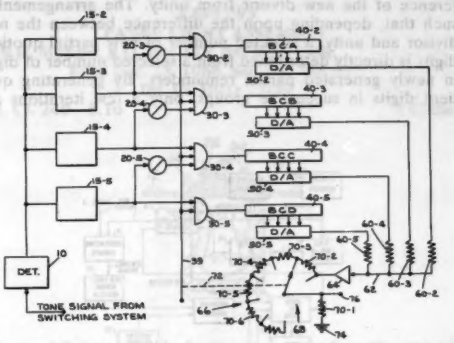
Kenneth M. Miller, Oak Park, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 19, 1968, Ser. No. 777,062

Int. Cl. H03k *13/175, 13/04*

U.S. Cl. 235—154 **9 Claims**

A system for determining a representative value for the average or mean magnitude of a plurality of input signals of diverse magnitudes. The number of input signals received within each of a plurality of magnitude ranges are initially counted within a predetermined period of time, and an analog signal representative of each total count produced. Each analog signal is then normalized with respect to a different predetermined value of magnitude chosen to represent the magnitude of each input signal received within each magnitude range. All of the adjusted analog signals are thereafter combined, with the resulting signal divided by the total



number of input signals initially received by the system so as to provide a representative, weighted value for the average magnitude of all of the input signals.

3,591,786

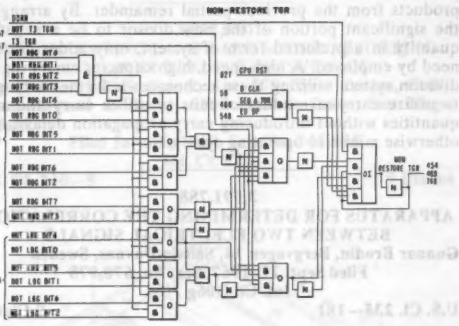
PREDICTED ITERATION IN DECIMAL DIVISION

Robert A. Nelson, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 445,325, Apr. 5, 1965, now abandoned. This application Jan. 13, 1967, Ser. No. 609,243

Int. Cl. G06f *7/44*

U.S. Cl. 235—160 **12 Claims**



Decimal divide apparatus capable of performing divide iterations in accordance with either the restoring technique (wherein the sign of each partial dividend is made to conform to the sign of the previous partial dividend) or the nonrestoring technique (wherein each successive partial dividend is utilized unaltered). For each iteration, the technique that is likely to be more efficient is selected. The selection is based upon the high-order digits of the divisor and the partial dividend and the sign of the partial dividend.

3,591,787

DIVISION SYSTEM AND METHOD

Charles V. Freiman, Los Altos, and Chung Chian Wang, Stanford, both of, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

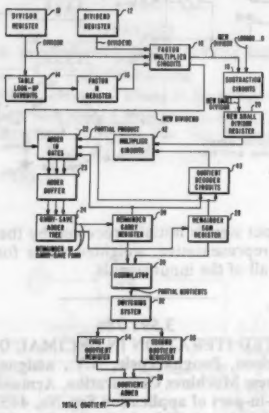
Filed Jan. 29, 1968, Ser. No. 701,267

Int. Cl. G06f *7/39, 7/38*

U.S. Cl. 235—164 **9 Claims**

A system and method for digital division employing a composite of table lookup and iteration techniques. A stored logic table is used which generates a factor M which when

multiplied against the divisor, provides a new divisor in a predetermined range close to unity in value. Both the divisor and the dividend are then multiplied by the factor M, the capacity of the table lookup determining the maximum difference of the new divisor from unity. The arrangement is such that, depending upon the difference between the new divisor and unity, a selected number of new partial quotient digits is directly determined from a selected number of digits in newly generated partial remainders. By generating quotient digits in successive groups, only a few iterations are



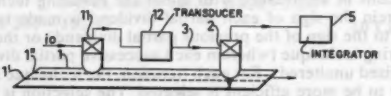
needed to divide one long number by another. Successive division steps entail merely the generation of new partial products, and derivation of the difference of these partial products from the previous partial remainder. By arranging the significant portion of the new divisor to be a negative quantity in a preferred form of system, only adder circuits need by employed. A high speed, high capacity binary digital division system utilizing these techniques is further arranged to utilize carry-save adder circuits to utilize carry and sum quantities without introducing carry propagation delays, and otherwise minimize operating cycle time.

3,591,788

APPARATUS FOR DETERMINING THE CORRELATION BETWEEN TWO ELECTRICAL SIGNALS

Gunnar Brodin, Bergvagen 14, Saltsjo-Duvnas, Sweden

Filed Sept. 27, 1967, Ser. No. 670,978
Int. Cl. G06g *7/19*
U.S. Cl. 235—181 **9 Claims**



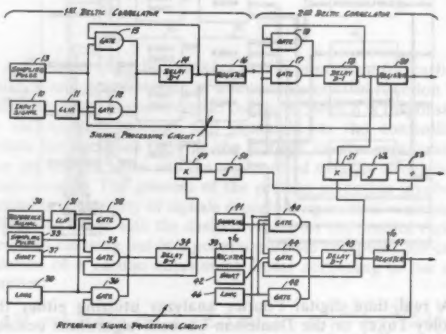
Apparatus for obtaining ordinates on a correlation function of two electrical signals, including, a ferromagnetic recording medium and an electromagnetic pickup head movable relative to one another, the ferromagnetic recording medium having recorded thereon a first of the two signals and the magnetic pickup head having included in its magnetic circuit a Hall element; a control current supply means for passing a control current through the Hall element at right angles to the magnetic field in the pickup head and proportional to the second of the two signals, including, a magnetic recording head associated with the recording medium to record the second signal a predetermined period of time ahead of the detection of the first signal by the pickup head or a second magnetic pickup head, adapted to detect the second signal from a parallel track on the recording medium, having a second Hall element in its magnetic field, a constant current input means for passing a current through the second Hall element perpendicular to the magnetic field through the second Hall element, an output connected to the Hall element to receive an output voltage from the second Hall element orthogonally with respect to the second pickup head's magnetic field and the constant current and a transducer for converting the output of the said second Hall element to a proportional current and feeding such current to the input of the first Hall element; a first Hall element output means to receive a voltage from the first Hall element orthogonally to the magnetic field through the first Hall element and the control current to the first Hall element; and an integrator system connected to the first Hall element output, such as a low-pass filter or an operational amplifier and a control circuit for resetting the amplifier output to zero and varying the integration period, for integrating such output and displaying the output of the integrator as an indication or a recordation. The time delay interval may be varied by varying the relative speed between the recording medium and a pickup head, two pickup heads, or a pickup and a recording head, as the case may be, or by varying the distance between a pickup head and a recording head or two pickup heads, respectively.

3,591,789

EXTENDED APERTURE DELTIC CORRELATOR

David Hoffman, Hillsdale, N.J.; Roman Sadowy, Jr., New York, N.Y., and Budd B. Adams, Springfield, Va., assignors to the United States of America as represented by the Secretary of the Navy

Filed Jan. 22, 1969, Ser. No. 793,041
Int. Cl. G06f *15/34;* **G06g** *7/19*
U.S. Cl. 235—181 **3 Claims**



There are disclosed arrangements for extending the aperture of Deltic correlators which involve (1) cascading the delay line loops each of which has a time delay approximately equal to the maximum sampling period, and (2) increasing the sampling period by making it a multiple of the basic sample period.

3,591,790

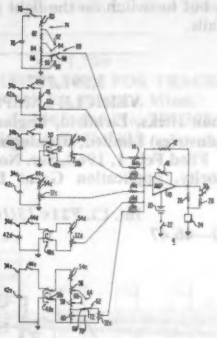
COMPUTER DEVICE WITH INTERCHANGEABLE PARAMETER SCALING

John H. Couture, 80 Hadley Road, South Burlington, Vt.

Filed May 7, 1968, Ser. No. 727,299
Int. Cl. G06g *7/48*
U.S. Cl. 235—193 **19 Claims**

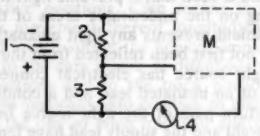
There is disclosed herein a portable electronic computer device of simplified construction and low cost useful to solve a wide range of engineering and other mathematical problems. The device includes an operational amplifier connected as a summer and related input circuitry including input potentiometers, and reciprocal and scale-expanding or

multiplier switches together with a series of removable interchangeable parameter scale cards designed to provide



proper scaling and interrelationship for a plurality of dependent and independent variables in a wide range of problems.

3,591,791
PRECISION ANALOG COMPUTER FOR MULTIPLYING AND DIVIDING
Loebe Julie, New York, N.Y., assignor to Julie Research Laboratories, Inc., New York, N.Y.
Filed May 7, 1969, Ser. No. 822,505
Int. Cl. G06g *7/16*
U.S. Cl. 235—195 **5 Claims**

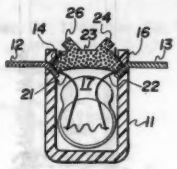


An analog computer, which divides or multiplies, utilizes a circuit module which may be a repeated unit. One form of the module includes an operational amplifier and a transfer ratio device. The transfer ratio device may be a linear voltage divider. One, or more, modules are used with a voltage dividing network and a null indicating device to form the analog computer.

3,591,792
MAKEUP ACCESSORY
Alfred H. Soltan, 6789 Clyde St., Forest Hills, N.Y.
Filed Nov. 29, 1968, Ser. No. 779,979
Int. Cl. F21v *33/00*
U.S. Cl. 240—4.2 **10 Claims**

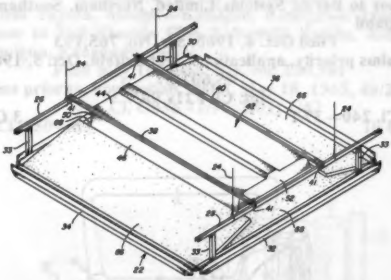
A makeup accessory comprising a base and a frame carrying a mirror mounted on the base, a bracket comprising pairs of pivoted members which permit pivoting the frame of the device mounting the frame to the base from a closed position over the base to an intermediate position extending outwardly beyond the side of the base of the device, and further swinging the frame from the intermediate position to an open position with the frame upstanding from one side of the base.

3,591,793
PANEL LIGHT ASSEMBLY
Jack D. McKim, P.O. Box 149, Del Mar, Calif.
Filed Dec. 23, 1968, Ser. No. 786,017
Int. Cl. H01r *13/50*
U.S. Cl. 240—8.16 **1 Claim**



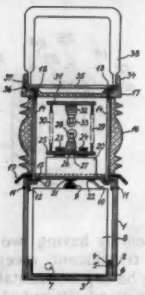
A panel light assembly having two embodiments, one of which employs a translucent receptacle-filter, which is colored for filtering having horizontally extending electrical contacts extending beyond the outside surface and in proximity to first and second recesses in the inner surface of the receptacle, the receptacle-filter being dimensioned for receiving a lamp having pliable leads extending toward the top of the receptacle-filter and a resilient wedge member dimensioned for a press fit within the recesses pressing the flexible leads of the lamp against the electrical contacts; a second embodiment wherein a base is provided with first and second electrical contacts passing therethrough being dimensioned for receiving the pliable leads of a lamp thereon and a cap-filter which is translucent and utilized as a filter dimensioned for receiving the lamp thereon and having recesses dimensioned for a press fit around the ends of the electrical contacts thereby pressing the pliable leads against the electrical contacts.

3,591,794
CEILING HAVING LAMPS AND SOUND ABSORBING AND LIGHT REFLECTING SURFACE
Paul D. Dail, 800 S. Sunset, Apt. 270, West Covina, Calif., and Howard A. Busby, 6365 Lambda Drive, San Diego, Calif.
Filed July 17, 1968, Ser. No. 745,595
Int. Cl. F21s
U.S. Cl. 240—9 **9 Claims**



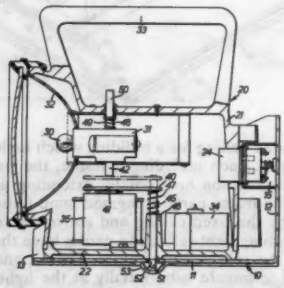
A suspended ceiling for a building which includes a plurality of modules, each including a frame, the frame being arranged in a common horizontally extending plane. At least certain of the frame carry elongated lamp fixtures which are supported by the fixed ceiling and above the frame sections. Sound absorbing light-reflecting panels have their lower ends carried by the said certain frames. These panels extend upwardly and terminate substantially at the light emitting surface of the lamp fixtures. Two of these panels are elongated, and, depending upon the width of the light fixtures, relative to the width of the module, the two panels are disposed at angles between approximately 158° and 163° with respect to the plane of the light emitting surface.

3,591,795
LANTERN
Per Neesbye-Hansen, Kobmagergade 22, Copenhagen K, Denmark
Filed Oct. 10, 1968, Ser. No. 766,400
Int. Cl. F21l 7/00
U.S. Cl. 240—10.66 6 Claims



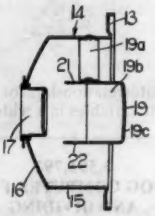
A lantern including a battery holder portion and a bulb holder portion which interfit at respective coaxial bearing surfaces so as to permit one portion to be turned relative to the other about the common axis of the bearing surfaces, each of the bearing surfaces being at least in part constituted by cooperating locking means to enable the two portions to be interfitted with a snap action to thereby hold the two relatively rotatable portions against separation in the axial direction unless a predetermined minimum separating force is applied. The two portions when assembled cooperate at the said bearing surfaces to enclose a hermetically sealed space for a battery, the battery holder portion being provided with projections or recesses for holding the battery against rotation relative to the battery holder portion, whereby when the battery is inserted, a contact thereon located eccentric to the common axis of the cooperating bearing surfaces can be engaged and disengaged with a contact on the bulb holder portion by relative rotation of said portion and the battery holder portion.

3,591,796
EMERGENCY ELECTRIC LIGHTING INSTALLATIONS
John Scott Netherwood Barker, Southampton, England, assignor to Bardic Systems Limited, Northam, Southampton, England
Filed Oct. 4, 1968, Ser. No. 765,193
Claims priority, application Great Britain, Oct. 5, 1967, 45,601/67
Int. Cl. F21v 9/04
U.S. Cl. 240—37.1 3 Claims



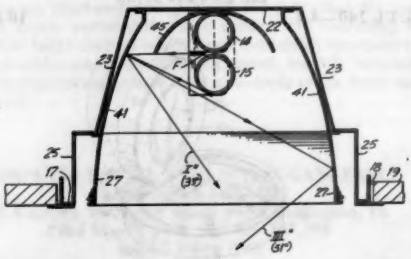
A portable handlamp incorporating a rechargeable battery is removably mounted in a bracket to form an emergency electric lighting installation. It incorporates a transformer and rectifier arranged to trickle charge the battery from a supply, and the transformer acts on an armature secured to a bolt to lock the lamp in the bracket so long as the supply is maintained, but to switch on the light and release the lock if the supply fails.

3,591,797
VEHICLE LAMPS
Harris Vernon Hicks, Lichfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 1, 1968, Ser. No. 702,461
Claims priority, application Great Britain, Feb. 6, 1967, 5565/67
Int. Cl. F21v 13/10
U.S. Cl. 240—46.47 4 Claims



A vehicle lamp including a lens, a reflector, and a light source. The reflector includes areas from which it is undesirable that light is reflected, and in order to prevent reflection from these undesirable areas there is provided a shield which is associated with the light source. The shield is nonreflective, and is such that it prevents light from the light source impinging on the undesirable areas of the reflector. Moreover, the shield prevents any light emanating from the lamp which has not first been reflected from the reflector. In addition, the light source has electrical connections made thereto by way of an insulated lead and a conductive braid, the electrical return path of the light source being through the braid. The braid and the supply lead have female connectors at their ends, the female connectors being of different sizes so that external connections to the lamps cannot be made in such a manner that the braid becomes the supply lead.

3,591,798
LIGHTING FIXTURE
Noel S. Florence, Cranford, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Nov. 4, 1968, Ser. No. 772,903
Int. Cl. H05b 33/02
U.S. Cl. 240—51.11 5 Claims



A lighting fixture comprising a pair of parallel vertically aligned fluorescent lamps positioned midway between two elongated specular reflecting surfaces each of which is substantially parabolic in curvature. The reflecting surfaces are arranged with respect to the lamps so that the major portion

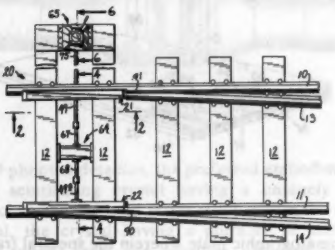
of the illumination provided by the fixture will be projected therefrom at an angle greater than 30° with respect to the vertical so as to minimize the veiling reflections effect to a viewer whose working surface is illuminated by such fixture.

3,591,799

SWITCH MECHANISM FOR TRACKS

Harold L. Lica, 813 W. 7th St., Winona, Minn.

Filed Dec. 5, 1968, Ser. No. 781,398
Int. Cl. E01b 7/08
U.S. Cl. 246—433 8 Claims



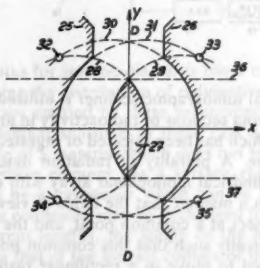
Switch mechanism associated with a vehicle supporting pair of main tracks and a pair of side tracks which has a pair of housings adapted to mount a pair of track portions at the juncture of the pair of main and side tracks. The track portions are mounted in their respective housings for generally horizontally disposed vertical movements between operative and inoperative positions. Cam means is mounted in the housings for movement thereof longitudinally of the track portions and means within the housing imparts simultaneous movements to the cam means in directions longitudinally of the track portions and to the track portions to move the track portions vertically into position to allow the vehicle to travel along the pair of main tracks or alternately switch the vehicle to the pair of side tracks.

3,591,800

ATOMIC OR MOLECULAR BEAM RESONATOR HAVING FIELD CONCENTRATING MEANS FOR THE SECOND STATE SELECTOR

Peter Kartaschoff, Neuchatel, and Pierre-Etienne Debely, Neuchatel, both of, Switzerland, assignors to Laboratoire Suisse De Recherches Horlogeras, Neuchatel, Switzerland

Filed Feb. 25, 1969, Ser. No. 802,094
Claims priority, application Switzerland, Apr. 19, 1968, 5866/68
Int. Cl. G01n 27/78; H03b 3/12
U.S. Cl. 250—41.3 4 Claims



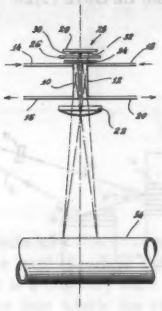
Disclosed herein is an atomic or molecular beam resonator having a source for producing the beam, a first and second state selector separated by an interaction zone, means for generating an oscillating field in the interaction zone, and a detector. The second state selector comprises by a dipolar assembly having a metallic member disposed within its field for concentrating the lines of the force of the field between the member and each of the poles of the assembly.

3,591,801

DOUBLE BEAM OPTICAL ABSORPTION PHOTOMETER HAVING SAMPLE AND REFERENCE CHAMBERS POSITIONED ALONG A SINGLE OPTICAL AXIS

Emmet S. Watson, Ridgefield, Conn., assignor to Picker Corporation

Filed Mar. 21, 1968, Ser. No. 714,906
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 18 Claims



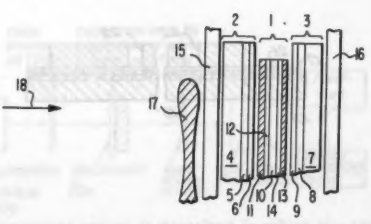
A simple, high performance double beam optical absorption photometer for use in chemical analysis instruments is described. Two small cylindrical chambers for sample and reference liquids are positioned side by side and along a single optical axis. Collimated ultraviolet radiation from a single source is passed lengthwise through both chambers and the relative absorption of sample and reference liquids sensed by a dual photodetector. A Wheatstone bridge circuit containing the photodetector elements is excited by a feedback power supply and provides linear absorbance readout.

3,591,802

METHOD OF MAKING A COLOR RADIOGRAPH, AND A FLUORESCENT SCREEN AND LIGHT SENSITIVE MATERIAL USED THEREFOR

Mataichi Tajima, Ashigara-Kamigun, Kanagawa, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Ashigara-Kamigun, Kanagawa, Japan

Filed May 16, 1966, Ser. No. 550,501
Claims priority, application Japan, May 18, 1965, 40/28807
Int. Cl. G03b 41/16; H01j 1/62
U.S. Cl. 250—65 10 Claims



A fluorescent screen for producing improved color radiographs comprising at least two color filter materials having different spectroscopic characteristics and a fluorescent material associated with the filter material, the filter materials being interposed between the fluorescent material and the film on which the radiograph will be produced.

By passing radiation through an object and impinging the radiation on the fluorescent material, it is caused to fluoresce. The fluorescent material is correlated with the filters so that each filter passes radiation in a separate nonoverlapping portion of the spectrum. The filtered radiation is then passed onto the photographic color film.

3,591,803

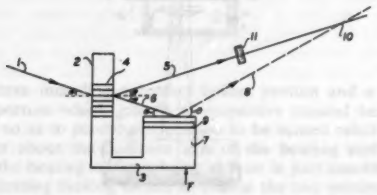
METHOD OF OBTAINING X-RAY INTERFERENCE PATTERNS

Nathan Spielberg, Hartsdale; Dominick J. DeBitetto, Briarcliff Manor, and Ralph S. Levitt, Ossining, all of, N.Y., assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 653,221, July 13, 1967, now abandoned. This application Oct. 16, 1969, Ser. No. 867,987

Int. Cl. G01n *23/20*

U.S. Cl. 250—65 **4 Claims**



A method of obtaining X-ray interference patterns in which a crystal exhibiting the Borrmann effect, i.e., anomalously high transmission of X-rays by means of diffraction yielding a forward diffracted and a reflected diffracted ray, is employed and subsequently one of these rays is Bragg reflected causing it to converge with and interfere with the other ray.

3,591,804

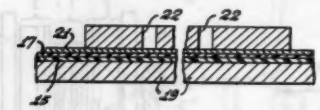
MAGNETICALLY ATTRACTIVE MARKING DEVICE AND HOLDING MEMBER FOR X-RAY FILM HOLDER

John L. Minasian, 2319 W. Magnolia Blvd., Burbank, Calif.

Filed Aug. 1, 1968, Ser. No. 749,352

Int. Cl. G03b *17/24, 41/16*

U.S. Cl. 250—67 **10 Claims**



An X-ray apparatus including a film holder or cassette in basically conventional form with markers on the cover plate of the cassette for producing identifying images on the negative, the markers comprising strips of magnet material with identifying stencil letters cut therein. The magnets are held in place by strips of metal glued in selected locations to the cover plate. An alternative form of the marker has rubber of a contrasting color filling the letter spaces.

3,591,805

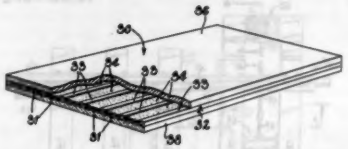
THIN LAYER CHROMATOGRAPHIC PLATE HAVING PREADJUSTED SPECTRAL TRANSMISSIVITY AND EMISSIVITY AND PREADJUSTED OPAQUE AND NONOPAQUE INTERVALS

Dietmar M. Schoeffel, Hillsdale, N.J., assignor to Schoeffel Instrument Corp., Westwood, N.J.

Continuation-in-part of application Ser. No. 705,863, Feb. 25, 1968, now abandoned, and Continuation-in-part of application Ser. No. 710, 402, Mar. 4, 1968, now abandoned. This application Feb. 20, 1969, Ser. No. 801,126

Int. Cl. G01n *21/20*

U.S. Cl. 250—71 R **12 Claims**



A chromatographic plate wherein the spectral transmission is preadjusted and which is provided with preadjusted transparent and opaque intervals.

3,591,806

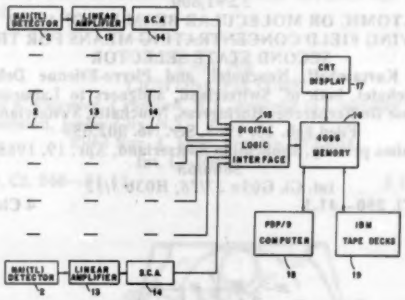
MULTICRYSTAL TOMOGRAPHIC SCANNER FOR MAPPING THIN CROSS SECTION OF RADIOACTIVITY IN AN ORGAN OF THE HUMAN BODY

Aaron B. Brill; James A. Patton; Jon J. Erickson, and Paul H. King, all of Nashville, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 17, 1970, Ser. No. 20,287

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 S **10 Claims**

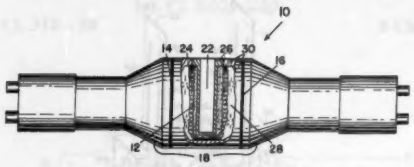


A multicrystal tomographic scanner is utilized for mapping thin slices or cross sections of radioactivity in an organ of the human body which has been injected or ingested with a suitable radioisotope. A plurality of radiation detectors are arranged in a cylindrical monoplanar array with each detector focused in such a manner that the fields of view of all of the detectors intersect at a common point, and the detectors are driven mechanically such that this common point of the detectors is caused to move in a rectilinear raster of about 8 inches square. The distribution of radioactivity measured by the detectors due to the amount of radioisotope within the area being scanned is stored in a computer memory and reproduced on an oscilloscope display, as the section is being examined.

3,591,807
PHOTON DETECTOR UTILIZING A WELL-TYPE SCINTILLATION CRYSTAL

Charles W. Mays, Salt Lake City; Ray D. Lloyd, Murray, and David R. Atherton, Salt Lake City, all of, Utah

Filed Sept. 6, 1966, Ser. No. 577,441
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R 2 Claims

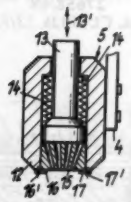


A novel phonton detector, the preferred embodiment comprising a scintillating crystal having a uniquely oriented counting chamber disposed transversely within the scintillating crystal, the crystal having a plurality of planar faces uniformly spaced from the counting chamber to accommodate a plurality of photomultiplier tubes. The mentioned novel phonton detector has unexpected and surprising capability of achieving uniform counting rate independent of sample position or sample volume and shape.

3,591,808
DEVICE FOR DIAGNOSIS WITH RADIOACTIVE ISOTOPES

Rudolf Prag, Marloffstein, and Edgar Tschunt, Erlangen, both of, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 24, 1968, Ser. No. 786,583
Claims priority, application Germany, Jan. 5, 1968, P 16 16 111.8
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 2 Claims

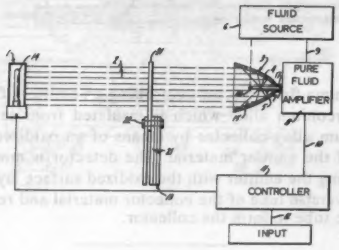


An apparatus for isotope diagnosis has a measuring device for determining the distribution of radioactive substances in a body from rays emitted by these substances. The device includes an element sensitive to these rays and located in a housing made of a material which does not transmit the rays. The ray-sensitive element has a surface receiving the rays and covered by a collimator which can be pushed into the housing. One collimator may be exchanged for other collimators of different lengths, the length of the housing being at least equal to that of the longest collimator plus the length of the ray-sensitive element. The invention is particularly characterized in that the ray-sensitive element is also movable in the direction of the longitudinal axis of the housing. The ray-sensitive element and the collimator are joined and the surface of the collimator which receives the incoming rays is located in an opening of the screening housing.

3,591,809
FLUIDIC RADIATION SENSOR VARYING THE VISCOSITY OF A FLUID STREAM

Richard N. Laskaniemi, Milwaukee, and Paul H. Sorenson, New Berlin, both of, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 27, 1969, Ser. No. 793,997
Int. Cl. G01j 5/38
U.S. Cl. 250—83 R 10 Claims

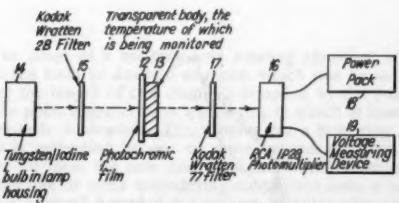


This disclosure includes a fluidic sensor establishing a fluid signal related to the level of radiant energy impressed on the sensor. The sensor is a capillary tube mounted at the focal point of a reflector into which the radiant energy field is directed. The output of the capillary tube is a signal stream related to the temperature of the tube. The output is connected to a fluid amplifier. A filter is shown between the source of radiant energy and the reflector to select the frequency or frequency band within the total radiation spectrum which is passed from the source to the reflector.

3,591,810
TEMPERATURE MONITORING APPARATUS USING A PHOTOSCHROMIC HEAT SENSOR

Geoffrey Jackson, Harpenden, England, assignor to Hawker Siddeley Dynamics Limted, Hatfield

Filed Apr. 15, 1969, Ser. No. 816,261
Claims priority, application Great Britain, Apr. 18, 1968, 18429/68
Int. Cl. G01t 1/16
U.S. Cl. 250—83 8 Claims


Kodak Wratten 2B Filter
Transparent body, the temperature of which is being monitored
Power Pack
Tungsten Iodine bulb in lamp housing
Photochromic Film
Kodak Wratten 77 Filter
RCA IP28 Photomultiplier
Voltage Measuring Device

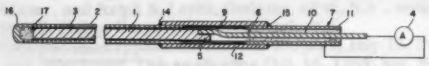
A temperature sensor is described in which the temperature-responsive element is a photochromic compound. This compound, in film form, is irradiated by activating and monitoring radiation of appropriate wavelengths. The activating radiation induces a change in the extent to which the monitoring radiation is transmitted by the photochromic compound. The amount of this change is temperature-dependent, thereby giving the required temperature responsiveness.

3,591,811

GAMMA FLUX DETECTOR AND METHOD OF MANUFACTURE THEREOF

Ross Bisbee Shields, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Nov. 29, 1968, Ser. No. 779,761
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 7 Claims



A gamma flux detector comprising an emitter of zirconium or a zirconium alloy which is insulated from say a nickel chromium alloy collector by means of an oxidized coherent layer of the emitter material. The detector is manufactured by placing the emitter with the oxidized surface layer thereon in an oversize tube of the collector material and reducing the oversize tube to form the collector.

3,591,812

NEUTRON-GENERATING TARGETS

Jacques Detaint, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Aug. 26, 1968, Ser. No. 755,433
Claims priority, application France, Sept. 15, 1967, 121,146
Int. Cl. G21g 3/04
U.S. Cl. 250—84.5 1 Claim

Neutron-generating targets are made up of a layer of a hydride mixture of at least two metals of two different groups, one of which increases in volume during the chemical hydriding reaction and the other decreases in volume.

ERRATA

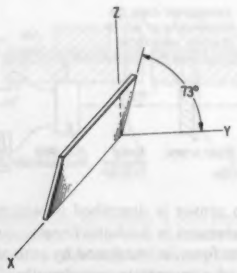
For Classes 250—231, 250—237, 290—004, 290—031, 307—010, 307—031, 307—087, 307—088, 307—106, 307—141, 307—202, 307—225, 307—232, 307—237, 307—247, 307—251, 307—255, 307—293, 310—003, 310—008 see:
Patent Nos. 3,591,841 thru 3,591,862

3,591,813

LITHIUM NIOBATE TRANSDUCERS

Gerald A. Coquin, Berkeley Heights; Allen H. Meitzler, Morristown, and Arthur W. Warner, Jr., Whippany, all of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 28, 1969, Ser. No. 803,280
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 7 Claims



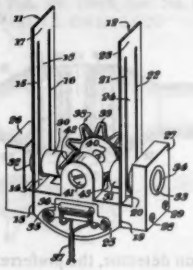
The specification describes ultrasonic transducers made from single crystal lithium niobate. Five crystal orientations are given for which transducer characteristics are especially favorable.

3,591,814

COMPOUND REED OSCILLATOR OR FILTER

Cecil Frank Clifford, Newbridge Works, Bath, Somerset, England

Filed June 6, 1969, Ser. No. 831,189
Int. Cl. H02k 33/02
U.S. Cl. 310—25 9 Claims



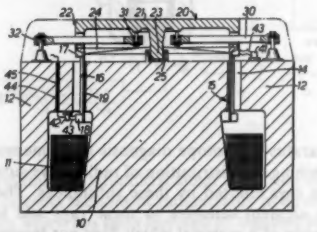
An electromechanical oscillator or filter made up of one, or a pair of, primary reeds supported at one end for mechanical oscillation, each primary reed being slotted so as to form a secondary reed lying in the plane of the primary reed and having its free end adjacent the supported end of the primary reed. A pair of reeds may be constituted by the tines of a tuning fork. Each secondary reed is associated with a magnet and coil to enable mechanical oscillation to be maintained by a conventional electrical maintaining circuit. The secondary reeds may have magnetic members which cooperate with a wavy magnetic track on a driving wheel to provide a rotary drive.

3,591,815

MOVING COIL ELECTROMAGNETIC VIBRATORS

Peter Grootenhuis, London, and James Walter Gearing, St. Leonards-on-Sea, Essex, both of, England, assignors to Derritron Limited, London, England

Filed June 10, 1969, Ser. No. 831,925
Claims priority, application Great Britain, June 11, 1968, 27658/68
Int. Cl. H02k 33/18
U.S. Cl. 310—27 7 Claims

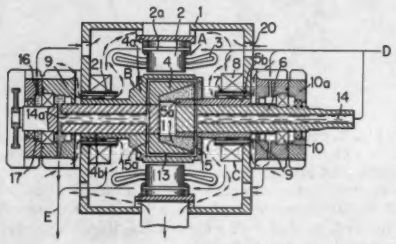


In an electromagnetic vibrator a stationary magnet affords an annular or part annular airgap containing a moving conductor unit capable of vibratory movement about the axis secured to an output member to transmit torsional vibration to a load. Alternating current is passed through the conductor unit in directions substantially parallel to its axis. In one embodiment provision is made for vibratory movement both longitudinally along the axis and angularly about the axis.

3,591,816
SYNCHRONOUS MACHINE PROVIDED WITH COMB-SHAPED MAGNETIC POLES

Moriyoshi Sakamoto, Yokohama-shi; Yasuaki Kanda, Tokyo-to; Hiroyuki Kitamura, Yokohama-shi, and Kenichi Hashizume, Yokohama-shi, all of, Japan, assignors to Tokyo Shibuia Denki Kabushiki Kaisha, Horikawa-cho, Japan

Filed Sept. 5, 1969, Ser. No. 855,645
Claims priority, application Japan, Sept. 9, 1968, 43/64311; 43/64312; 43/64313; 43/77251; 43/77252; 43/77253
Int. Cl. H02k 9/00
U.S. Cl. 310—58 6 Claims

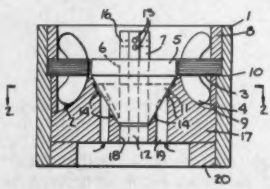


A synchronous machine includes a stator with an exciting arrangement, a rotor having two interfitting, opposite magnetic pole yokes of comb-shaped configuration supported on two shafts. Each shaft is provided with cooling passages which operably communicate with the radial and longitudinal passages within the rotor. The rotor is also provided with nonmagnetic wedges which include axially disposed cooling holes connected with cooling passages within the rotor. Furthermore, synchronous machine is provided with a ventilating fan for circulating cooling air through the machine.

3,591,817
HIGH SPEED MOTOR

August Kunzle, St. Gall, Switzerland, assignor to Heberlein & Co. AG., Wattwil, Canton of St. Gallen, Switzerland

Filed Dec. 5, 1969, Ser. No. 882,666
Claims priority, application Switzerland, Dec. 6, 1968, 18230/68
Int. Cl. H02k 5/16
U.S. Cl. 310—90 7 Claims



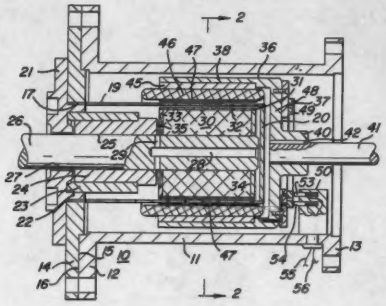
A high speed rotary field motor with a single conical bearing wherein the rotor shaft bearing and journal are separate from the electrically and magnetically active parts of the motor.

3,591,818
DRIVE COUPLING

Garland L. Fulton, Wayne, Pa., assignor to Process Industries, Incorporated, Huntingdon Valley, Pa.

Filed Mar. 10, 1969, Ser. No. 805,430
Int. Cl. H02k 49/10
U.S. Cl. 310—104 6 Claims

An electromagnetic responsive coupling for shafts and the like, one magnetic responsive component being of soft iron, high intensity permanent magnetic material of metal or ceramic, with the other and outer component being electromagnetic with power supply, supporting bearings being

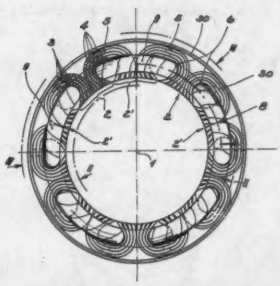


provided to retain alignment, and the inner and outer components being isolated to prevent fluid communication therebetween.

3,591,819
MULTIPLE-POLE ROTATING ELECTRICAL MACHINES

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen, Germany

Filed Mar. 5, 1969, Ser. No. 804,630
Claims priority, application Switzerland, Mar. 7, 1968, 3430
Int. Cl. H02k 1/06
U.S. Cl. 310—217 8 Claims



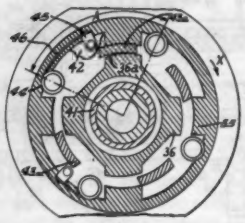
The poles of a multiple-pole rotating electrical machine take the form of discrete elements which can be so moved along the length of coil channels bounded by the poles that all the poles together form a pole ring in which at least every other pole is identical. The winding for a pole ring of this kind is embodied by one or more meandering continuous coils. To form the pole ring, a prefabricated winding comprising one or more meandering continuous coils is inserted into a channel bounded by one set of poles after which a further set of poles are pushed axially into contact with the first set to form a pole ring. These meandering coils can be used in axial split-casing motors. The meandering coils are produced in an apparatus having arms which move radially towards a center and which have at their ends grippers rotatable through 90°. As a final feature, annular lamination groups used in rotating electrical machines are produced from coiled metal strips.

3,591,820

BRUSH LIFTING GEAR FOR ELECTRICAL MACHINES

Frederick R. Jones, Ilford, Essex, England, assignor to The Plessey Company Limited, Ilford, Essex, England

Filed Aug. 15, 1969, Ser. No. 850,516
Claims priority, application Great Britain, Aug. 16, 1968, 39213/68
Int. Cl. H01r 39/42
U.S. Cl. 310—240 4 Claims



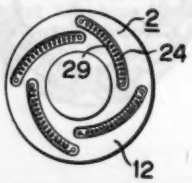
A rotary solenoid operable to lift the brushes off the commutator of an electrical machine is disclosed. The solenoid has radially inner and outer stationary pole pieces and an armature movable into the airgap between the pole pieces. The armature is provided with an auxiliary portion which bridges the airgap when the remainder of the armature has entered the airgap. The inner pole piece is shaped by a single angular machined cut.

3,591,821

ROTARY ANODE TYPE X-RAY GENERATOR HAVING EMITTING ELEMENTS WHICH ARE VARIABLY SPACED FROM THE CENTRAL AXIS OF CATHODE

Yoshitaka Seki, Yokohama-shi, and Takeshi Muraki, Kawasaki-shi, both of, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Apr. 15, 1968, Ser. No. 721,243
Claims priority, application Japan, Apr. 19, 1967, 42/24,545
Int. Cl. H01j 35/06, 35/26
U.S. Cl. 313—55 3 Claims



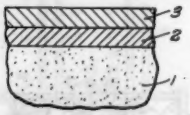
An X-ray generator comprises a cathode and a rotary anode mounted in opposite ends of an envelope. The cathode is provided with an electron emitting source in a desired doughnut-shaped region which is bounded by a minimum diameter circle and a maximum diameter circle, both of these circles being concentric with the rotary axis of said anode. The anode projects X-rays upon impingement thereof by an electron beam emitted from said electron emitting source. The electron emitting source is arranged on a line which connects the minimum and maximum diameter circles, whereby the electron beam from said electron emitting source is projected to the entire part of said X-ray radiating region by rotating said anode.

3,591,822

ELECTRIC DISCHARGE VESSEL ELECTRODE STRUCTURE OF PYROLYTIC CARBON DISCS

Helmut Katz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 12, 1968, Ser. No. 783,328
Claims priority, application Germany, Dec. 13, 1967, P 16 14 680.8
Int. Cl. H01j 1/02, 1/38
U.S. Cl. 313—355 12 Claims



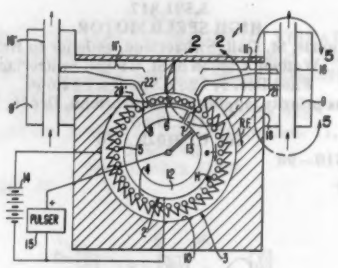
A high frequency power tube is provided with an electron gun in which the thermally heavy-duty electrodes and other parts thereof are provided as carbon bodies made of pyrolytical carbon interconnected in the form of discs which are coated with rhenium, and which for better conductivity are additionally coated with a metal of high electrical conductivity, preferably copper or silver.

3,591,823

WAVEGUIDE TO COAXIAL TO STRIPLINE TRANSITION FOR MATCHING TO SLOW WAVE CIRCUITS

Andrew S. Wilczek, Old Bridge, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed June 2, 1969, Ser. No. 829,639
Int. Cl. H01j 25/34
U.S. Cl. 315—39.3 7 Claims



A microwave crossfield amplifier tube of circular format is disclosed. Transmission line transition sections are provided for impedance-matching the ends of a slow wave circuit to hollow rectangular waveguides axially directed of the tube. Each transition includes a T-bar connector inside the rectangular waveguide. The upright portion of the T-bar is connected to the end of the slow wave circuit via the intermediary of a section of coaxial line which tapers into a stripline portion which in turn is connected to the slow wave circuit.

3,591,824

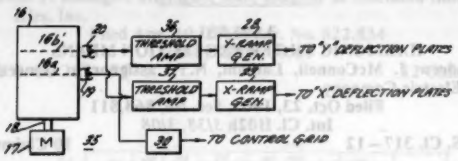
DRIVING MEANS FOR CRT'S

Richard B. Hanbicki, Princeton Junction, N.J., assignor to Madatron Inc., Rocky Hill, N.J.

Filed Mar. 5, 1969, Ser. No. 804,643
Int. Cl. H01j 29/52
U.S. Cl. 315—22 7 Claims

Apparatus for driving character-display tubes and the like, especially of the cathode-ray-tube type, providing circuitry for automatically centering symbols being displayed upon the CRT and for synchronously and accurately generating the

desired ramp signals in a simple and quite inexpensive manner and which employs circuitry for controlling the timing of the ramp signals to eliminate the need for high-precision synchronous-signal-generating means.

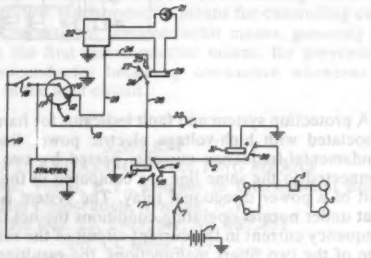


3,591,825

CLOCK AND LIGHT-SENSITIVE LIGHT CONTROL SYSTEM FOR MOTOR VEHICLES

Charles Keighley, Jr., R.D. #1 Box 489-X, Uniontown, Pa.

Filed June 13, 1969, Ser. No. 833,082
Int. Cl. B60g *1/08*; H05b *37/02*
U.S. Cl. 315—82 8 Claims



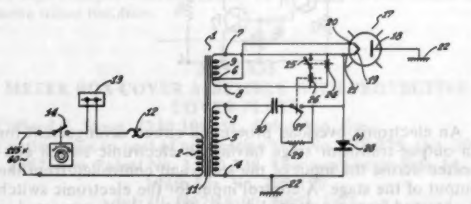
An electric line connects a battery with the lights of a motor vehicle and includes a normally closed switch, between which and the battery there is a manually operable switch. Electrically operated means are provided for opening the normally closed switch and connecting the lights to the battery directly. Connected with said means is a normally open switch operated by a photoelectric cell. A clock-actuated switch connects the battery with said means from dusk to dawn and with the normally open switch and the cell from dawn to dusk. While the cell is connected with the battery, it closes the normally open switch whenever the cell fails to receive enough illumination.

3,591,826

MICROWAVE OVEN POWER SUPPLY CIRCUIT HAVING HOT-WIRE RELAYS

Benjamin V. Valles, Williamsport, Pa., assignor to Litton Precision Products, Inc., San Carlos, Calif.

Filed Feb. 17, 1969, Ser. No. 799,715
Int. Cl. H05b *41/36*, *1/02*
U.S. Cl. 315—104 2 Claims



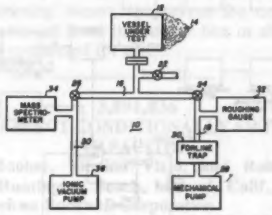
A microwave oven power supply circuit includes a transformer having a primary, high voltage secondary, and a tapped low voltage secondary winding. The start side of the high voltage secondary winding is grounded and the other side of the high voltage secondary winding is connected in series with a capacitor, the normally open contacts of a second hot wire relay, and a diode to ground; with the negative polarity diode terminal facing ground. A magnetron includes an anode connected to ground and a filament connected in series between the tap on the low voltage secondary winding and one side of the low voltage secondary. A connection is made between the positive polarity diode terminal and the magnetron filament. The heater coil of a first hot wire relay is connected across the low voltage secondary winding. Additionally, a set of normally open contacts in the first hot wire relay and the heater coil of the second hot wire relay are connected in series across the low voltage secondary winding.

3,591,827

ION-PUMPED MASS SPECTROMETER LEAK DETECTOR APPARATUS AND METHOD AND ION PUMP THEREFOR

Lewis D. Hall, Palo Alto, Calif., assignor to Andar/ITI, Inc., Sunnyvale, Calif.

Filed Nov. 29, 1967, Ser. No. 686,609
Int. Cl. H01j *17/22*
U.S. Cl. 315—108 10 Claims



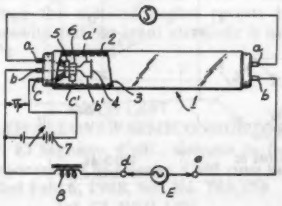
A mass spectrometer is connected to a vacuum system which includes a vacuum-pumping system and which is communicated with the vessel under test exposed to a suitable probe gas. The vacuum-pumping system consists of a first stage in the form of a mechanical roughing pump for reducing the system pressure to roughing pressure, and a second stage in the form of a high-vacuum pump which comprises an electronic getter-ion (sublimation) pump for pumping the chemically active nonnoble gases in combination with a Penning discharge chamber which houses discharge cathodes exposed to the deposit of the getter material from the getter-ion pump for pumping the noble gas.

3,591,828

DISCHARGE LAMP DEVICE AND ITS OPERATING APPARATUS

Hiroshi Washimi, and Ryokchi Imanka, both of Osaka, Japan, assignors to New Nippon Electric Company, Ltd., Osaka, Japan

Filed Aug. 11, 1969, Ser. No. 848,991
Claims priority, application Japan, Aug. 12, 1968, Aug. 21, 1968, 43/69334;43/59766
Int. Cl. H01j *17/22*
U.S. Cl. 315—108 18 Claims



In a high temperature discharge lamp such as an amalgam-containing fluorescent lamp, the electric potential or an

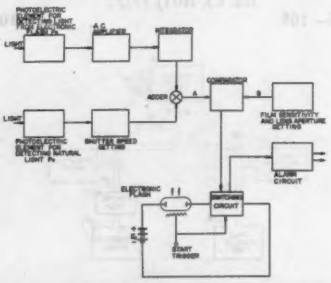
amalgam member is regulated by means of a voltage circuit having thermally sensitive elements to cause a part of the lamp discharge current to flow into the amalgam member for controlling the temperature of the same and hence the mercury vapor pressure within the discharge lamp, so that the light output of the discharge lamp is maintained, for a wider range of ambient temperature variations, substantially equal to the maximum value. When an AC voltage source is coupled to the amalgam member, the phase angle of the applied voltage to the lamp discharge current is selected to obtain favorable control.

3,591,829

AUTOMATIC CONTROL DEVICE FOR ELECTRONIC FLASH

Tomoji Murata, and Sadao Yamaoka, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1968, Ser. No. 722,287
Claims priority, application Japan, Apr. 20, 1967, June 27, 1967, Aug. 7, 1967, Aug. 21, 1967, 42/25351; 42/4112; 42/50649; 42/53637
Int. Cl. H01j *39/12*; **H05b** *41/36*
U.S. Cl. 315—151 **5 Claims**



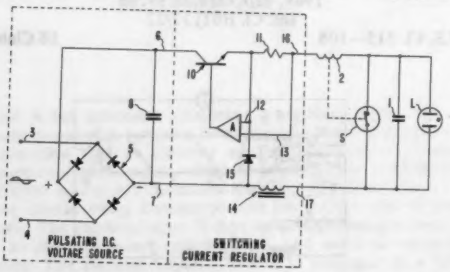
A device for automatic control of the quantity of light from an electronic flash, by comparing the brightness of a photographic object with the quantity of light required for particular photographing conditions including the degree of lens aperture selected and the sensitivity of the film used. The brightness of the photographic object is measured as the sum of the natural light brightness and the brightness due to electronic flash, and as soon as the sum brightness thus measured reaches the required quantity of light, a stop signal is given. Thereby, the electronic flash is controlled, and at the same time signal is given for the sufficient brightness of the photographic object.

3,591,830

STARTING AND OPERATING CIRCUIT FOR GAS DISCHARGE LAMPS

Samuel W. Woolsey, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 26, 1968, Ser. No. 762,933
Int. Cl. H05b *37/00, 39/00, 41/14*
U.S. Cl. 315—290 **5 Claims**



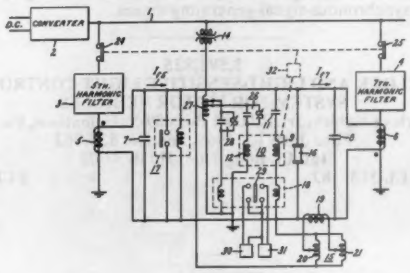
A starting and operating circuit for a gas discharge lamp is disclosed as comprising a vacuum switch adapted to be connected across a gas discharge lamp, a unidirectional conductor adapted to be connected across a direct current source, and an inductor, the vacuum switch, unidirectional conductor and inductor being connected in series circuit.

3,591,831

HARMONIC FILTER PROTECTION MEANS

Andrew J. McConnell, Latham, N.Y., assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,811
Int. Cl. H02h *3/38, 3/08*
U.S. Cl. 317—12 **10 Claims**



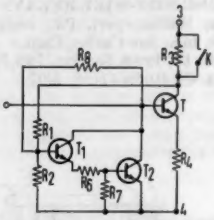
A protection system and fault indicator for harmonic filters associated with high-voltage electric power lines. Residual fundamental-frequency currents passed by two such filters connected to the same line are compared in the current circuit of a power directional relay. The system is adjusted so that under normal operating conditions the net fundamental-frequency current in the current circuit of the relay is zero. If one of the two filters malfunctions, the resulting increase in its fundamental-frequency current actuates the relay in a sense that indicates which filter is in trouble.

3,591,832

ELECTRONIC OVERLOAD PROTECTION CIRCUITS

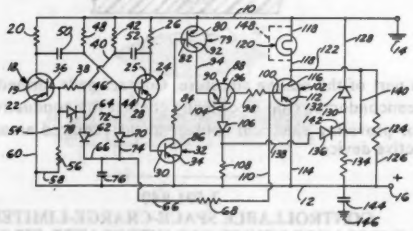
Horst Pelka, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of application Ser. No. 676,308, Oct. 18, 1967, now abandoned. This application May 18, 1970, Ser. No. 37,460
Int. Cl. H02h *3/08*
U.S. Cl. 317—23 **3 Claims**



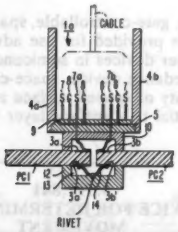
An electronic overload protection circuit arrangement for an output transistor stage having an electronic switch connected across the input of the stage and controlled from the output of the stage. A control input for the electronic switch is obtained from a potential divider that is itself connected in series with the load between the supply terminals of the stage.

3,591,833
PROTECTIVE MEANS FOR TRANSISTORIZED LOAD CIRCUIT
John F. Bolinger, Michigan, Ind., assignor to Meridian Industries, Inc.
Filed Apr. 10, 1969, Ser. No. 822,834
Int. Cl. H05b 39/00
U.S. Cl. 317—33 12 Claims



A transistorized switching circuit for flashers which includes a load switching transistor that is "turned off" in the event of a short in the load circuit. The switching transistor has associated first semiconductor means for controlling current flow and additional semiconductor means, generally in parallel with the first semiconductor means, for preventing the first semiconductor becoming conductive whenever a short occurs in the load circuit.

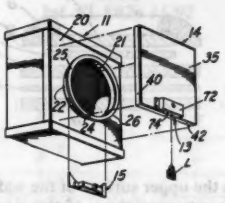
3,591,834
CIRCUIT BOARD CONNECTING MEANS
John T. Kolias, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,451
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CC 7 Claims



Printed circuit boards having perimeter edge connectors on either side of the boards are interconnected to each other by means of a removable connector comprised of top and bottom members to establish connections respectively to the top and bottom surfaces of said boards, the top member further having facilities to enable cable connections to be established to an external source which may be any form of an input/output instrumentality or another circuit board at some other location.

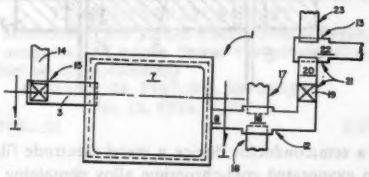
3,591,835
METER BOX COVER ASSEMBLY WITH PROTECTIVE COVER PLATE
Clifford E. Sloop, 2230 10th St., Columbus, Ga.
Continuation-in-part of application Ser. No. 678,975, Oct. 30, 1967, now Patent No. 3,440,330. This application Feb. 14, 1969, Ser. No. 799,190
Int. Cl. H02b 9/00; H05k 5/03
U.S. Cl. 317—109 5 Claims

A meter box cover assembly for use with an electricity meter socket box when the electricity meter is removed and which has an annular flange that fits against a corresponding flange on an electricity meter when it is in place. The cover assembly comprises a cover plate for insertion over the opening in the socket box and against the outer surface of the annular flange of the box, and a locking bracket extending from one edge of the cover plate and arranged to extend under and grip the rear surface of the flange of the socket box. A



slot is formed in the cover plate on the opposite side of the cover plate from the locking bracket and a keeper element is inserted about an arc of the flange and the cover plate is inserted over the keeper element. The portion of the keeper element protruding through the cover plate receives a lock, or similar fastening means, to prevent the cover assembly from being removed from the socket box or the socket box being illegally connected for use.

3,591,836
FIELD EFFECT CONDITIONALLY SWITCHED CAPACITOR
Robert K. Booher, Mission Viejo, and Robert W. Polkinghorn, Huntington Beach, both of, Calif., assignors to North American Rockwell Corporation
Filed Mar. 4, 1969, Ser. No. 804,171
Int. Cl. H01l 19/00
U.S. Cl. 317—231 5 Claims

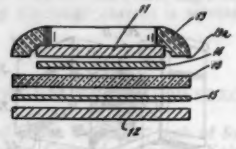


The semiconductor substrate area under a metal plate is induced to change from one type of conductivity to a different type of conductivity when a voltage in excess of the inversion threshold of the substrate is applied to the plate. A capacitor is produced which stores a charge proportional to the applied voltage between the metal plate and the induced region. The induced region is connected to an input electrode. When a voltage is applied to the input electrode the voltage on the fixed plate of the capacitor is boosted by an amount proportional to the applied voltage. When the voltage on the metal plate is reduced below the inversion threshold voltage the induced region reverts back to its original conductivity and the input electrode is isolated from the capacitor.

3,591,837
GLASS-SEALED ALLOYED SEMICONDUCTOR DEVICE
John L. Boyer, El Segundo, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Feb. 6, 1968, Ser. No. 703,370
Int. Cl. H01l 1/04
U.S. Cl. 317—234 R 7 Claims

A semiconductor device is formed having a silicon wafer which is assembled between molybdenum expansion plates

with junction-producing solders between the interfaces of the plates and wafer. A glass ring is secured about the outer periphery of the upper expansion plate in an initial manufacturing step, the upper plate being smaller in diameter than the wafer. The combined upper plate and ring is placed in



engagement with the upper surface of the wafer and, in single heating step, the outer periphery of the ring is fused to the exposed outer periphery of the wafer and the impurity containing solder is alloyed into the wafer to form one or more junctions.

3,591,838

SEMICONDUCTOR DEVICE HAVING AN ALLOY ELECTRODE AND ITS MANUFACTURING METHOD

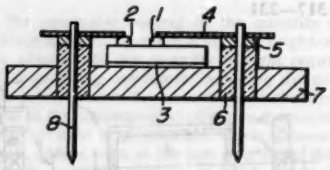
Shohei Fujiwara, Takatsuki-shi; Gota Kano, Kyoto; Shunsuke Matsuoka, Takatsuki-shi, and Tsukasa Sawaki, Toyonaka-shi, all of, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Dec. 23, 1968, Ser. No. 786,005

Claims priority, application Japan, Dec. 28, 1967, No 43/4

Int. Cl. H01l *3/00*

U.S. Cl. 317—234 R **6 Claims**



In a semiconductor device a metal electrode film formed by an evaporated gold-chromium alloy containing 3 percent to 13 percent by weight of chromium can not only make low ohmic contact with the semiconductor substrate but can be connected to it mechanically firmly. The lead-tin eutectic alloy can be soldered satisfactorily to the metal electrode film without causing erosion even if the electrode film is dipped in a fused solder solution. The semiconductor device with such a gold-chromium alloy film has great industrial merit since the manufacturing steps, particularly the connection of external electrode lead wires, are greatly simplified.

3,591,839

MICRO-ELECTRONIC CIRCUIT WITH NOVEL HERMETIC SEALING STRUCTURE AND METHOD OF MANUFACTURE

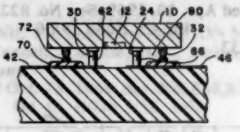
Arthur D. Evans, Saratoga, Calif., assignor to Siliconix, Inc., Sunnyvale, Calif.

Filed Aug. 27, 1969, Ser. No. 853,416

Int. Cl. H01l *3/00, 5/00, 7/00*

U.S. Cl. 317—234 **11 Claims**

A semiconductor device wherein a semiconductor chip having an active element formed in a limited area is bonded to an insulating substrate with the chip spaced apart form the substrate and the active area hermetically sealed within the region defined by the insulating substrate, the body of the chip and the sealing ring. Conductive lands formed on the surface of the substrate pass beneath an insulating ring which



is part of the sealing structure. Contact pads formed on the semiconductor chip electrically contact the conductive lands for providing electrical contact to the required areas of the active device.

3,591,840

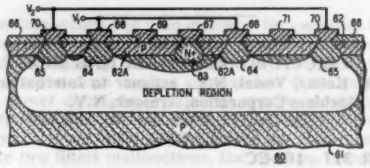
CONTROLLABLE SPACE-CHARGE-LIMITED IMPEDANCE DEVICE FOR INTEGRATED CIRCUITS

Vincent J. Glinski, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation-in-part of application Ser. No. 786,228, Dec. 23, 1968. This application Oct. 27, 1969, Ser. No. 869,547

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R **8 Claims**



A self-isolating, gate-controllable, space-charge-limited impedance device is provided for use advantageously in combination with other devices in semiconductor integrated circuits. In the impedance device, space-charge-limited current between a plurality of spaced surface zones is controlled by applying a potential to a surface layer through one or more electrodes.

3,591,841

OPTICAL DEVICE FOR DETERMINING EXTENT OF MOVEMENT

Knut Heitmann, Wetzlar; Eckart Schneider, Berghausen, and Ludwig Leitz, Wetzlar, all of, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Jan. 24, 1969, Ser. No. 793,711

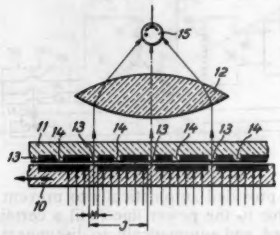
Claims priority, application Austria, Jan. 29, 1968, A 882/68

Int. Cl. G01d *5/34*

U.S. Cl. 250—231 R **8 Claims**

An apparatus for measuring the linear or angular movement of an object being provided with two graduation carriers movable relative to one another; one of the carriers being connectable to the object to be measured, the other one being connectable to a reference body. The apparatus further comprises means for illuminating one of the graduation carriers, means for projecting an image of the illuminated carrier on the other carrier, photoelectric means for sensing the carriers, and electronic evaluation means for processing the signals from the photoelectric means so as to provide output signals usable for digital indication or for control purposes. The first of the two graduation carriers having linear graduations comprising transparent or reflective striplike marks, the ratio of the graduation interval to the mark width corresponding, in the direction of the relative movement, to the desired number of interval fractions per graduation interval, and the second graduation carrier having

one or a plurality of sensing fields the number of which is less than the desired number of interval fractions and which together form a combination of image patterns, each of these sensing fields having a plurality of striplike, light-permeable and light-impermeable portions of its surface area which are parallel with the marks of the first graduation carrier and



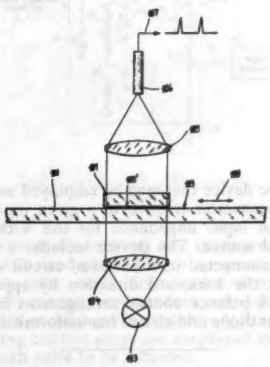
which are unequal inter se in such a way that, upon relative movement of the graduation carriers over a distance corresponding to a graduation interval, different combinations of image patterns are produced which correspond in number to the desired number of interval fractions per graduation interval.

3,591,842

GRID WITH GRADUATION MARKINGS SUCCEEDING IN NONEQUIDISTANT SPACES RELATIVE TO EACH OTHER

Gerhard Seewald, Altenmarkt (ALZ), Germany, assignor to Wenczler & Heidenhain, Traunreut near Traunstein, Germany

Filed Sept. 1, 1967, Ser. No. 665,009
Claims priority, application Germany, Sept. 1, 1966, W43,317
Int. Cl. H01j 5/16, 39/12; G08c 9/06
U.S. Cl. 250—237 6 Claims



A grid with graduation-markings of equal width relative to each other and succeeding in nonequidistant spacings, wherein the graduation-markings define center lines which follow each other in distances corresponding with a cycle of n graduation markings. The cycle has a period length of

$$\frac{n(n-1)}{k}+1$$

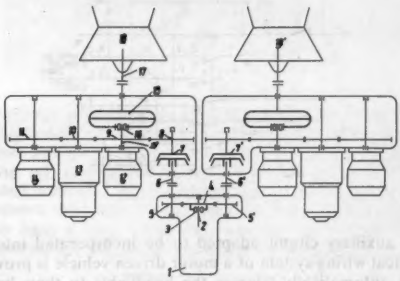
units and wherein each full numbered multiple of a unit occurs as spacing between two graduation markings exactly k times.

3,591,843

DEVICE FOR STARTING ONE OR SEVERAL AIRCRAFT ENGINES AND FOR DRIVING ASSOCIATED AUXILIARY EQUIPMENT

Helmut Friedrich, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed May 25, 1970, Ser. No. 40,993
Claims priority, application Germany, June 3, 1969, P 19 28 235.0
Int. Cl. F02n 15/02
U.S. Cl. 290—4 R 6 Claims



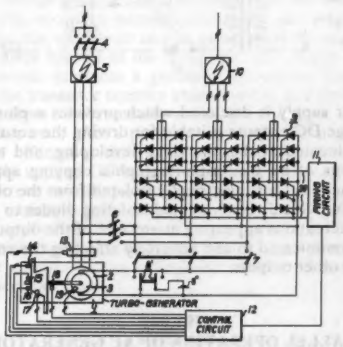
A starting aggregate for one or several aircraft engines is coupled to auxiliary equipment for such an engine via gear means; controlled transmission means couple the engine to the gear means to be drivingly connected to the aggregate and to the auxiliary equipment. The system is constructed that, in case the engine has ignited and runs at a higher speed it may drive the auxiliary equipment also at the higher speed and may decouple from the aggregate. Cross-coupling between plural engines permits starting of one engine by another as well as driving of all auxiliary equipment by the latter engine.

3,591,844

ELECTRICAL APPARATUS FOR ROTATING A TURBOGENERATOR SHAFT

Gerhard Schonebeck, and Jurgen Koehn, both of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 26, 1967, Ser. No. 670,587
Int. Cl. F02n 11/08
U.S. Cl. 290—31 6 Claims



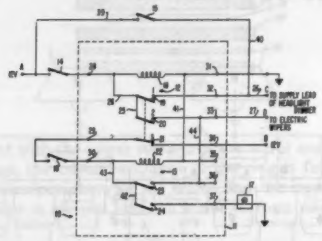
Electrical apparatus for rotating a turbogenerator or gas turbine shaft after it stops or before it starts. The apparatus comprises the generator of a turbogenerator plant used as an electric AC motor with lower frequency and electrically connected to an AC converter from normal to lower frequency. The speed of the motor (generator) may be varied, as desired, by controlling the power and frequency of the electricity supplied by the converter.

3,591,845

AUTOMATIC CONTROL CIRCUIT FOR HEADLIGHTS AND WINDSHIELD WIPERS OF MOTOR VEHICLES

Cornelius E. Vanderpoel, Jr., 7901 12th St. North, Petersburg, Fla., and Morton I. Broad, 1875 McCarley Road, Clearwater, Fla.

Filed Dec. 16, 1969, Ser. No. 885,592
Int. Cl. H02g 3/00
U.S. Cl. 307—10 5 Claims



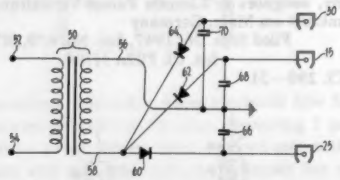
An auxiliary circuit adapted to be incorporated into the electrical wiring system of a motor driven vehicle is provided which automatically triggers the headlights to their lighted condition upon activation of the windshield wipers. The headlights are automatically turned off upon deactivation of the windshield wipers or placement of the ignition switch in the "off" position.

3,591,846

CORONA VOLTAGE SUPPLY FOR USE IN ELECTROSTATIC COPIER

Detlef Schaffer, Wetzlar, Germany, assignor to The Singer Company

Filed Oct. 17, 1968, Ser. No. 768,263
Claims priority, application Germany, Nov. 22, 1967, P 15 97 831.1
Int. Cl. H02j 1/00
U.S. Cl. 307—31 10 Claims



A power supply is disclosed which provides a plurality of high-voltage DC outputs suitable for driving the corona voltage units located at the charging, developing, and transferring stations of an electrophotographic copying apparatus. Each of the outputs is electrically isolated from the others by means of individual rectifying and isolating diodes to prevent voltage fluctuations appearing at any one of the outputs from being communicated to and adversely affecting the voltage at any of the other outputs.

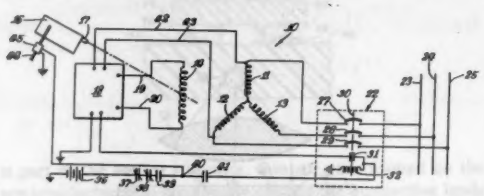
3,591,847

PARALLEL OPERATION OF AC GENERATORS

Richard M. Donnell, and John D. Hamilton, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sept. 27, 1968, Ser. No. 763,070
Int. Cl. H02j 3/00
U.S. Cl. 307—87 21 Claims

Means for connecting an AC generator driven by a prime mover to an AC power transmission line and operating the generator or generators on the power line. Each generator is connected to the power line by first bringing the generator up to approximately synchronous speed, with the generator field deenergized, and then connecting the generator winding to the power line. The power line voltage pulls the generator into synchronism, and the generator field is then energized.



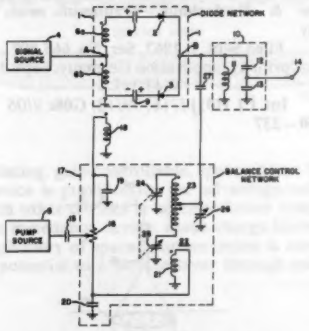
Means is also provided automatically to prevent connection of the generator to the power line until a certain generator speed is reached, and automatically to disconnect the generator from the power line in the event the prime mover is shut down.

3,591,848

PARAMETRIC AMPLIFIER EMPLOYING SELF-BIASED NONLINEAR DIODES

James C. Otto, Scottsdale, Ariz., assignor to General Electric Company

Filed July 25, 1968, Ser. No. 747,702
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 5 Claims



A parametric device that may be employed as an amplifier or frequency converter relative to a given input signal, exhibiting a high input impedance for use with a high impedance signal source. The device includes a pair of nonlinear diodes connected in a balanced circuit configuration and biased in the backward direction by application of a pump signal. A balance control arrangement is provided to compensate for diode and circuit nonuniformities.

3,591,849

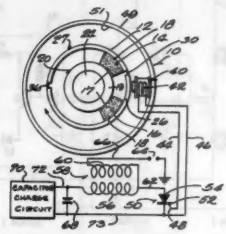
VARIABLE TIMING MEANS FOR CAPACITIVE DISCHARGE IGNITION SYSTEM

David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 20, 1969, Ser. No. 835,070
Int. Cl. H03k 3/64
U.S. Cl. 307—106 15 Claims

Disclosed herein is a pulse generator for triggering a capacitor discharge ignition system. The pulse generator includes a rotor having a hub and a spaced concentric outer ring with magnets located in the space between the hub and the outer ring. The outer ring is provided with a variable reluctance zone located between the magnets. In some embodiments, the rotor induces two voltage pulses of different magnitudes in an adjacently located pickup coil during one

revolution. The second voltage pulse triggers the ignition circuit within a low engine speed range and the first voltage pulse triggers the ignition circuit at speeds above the low



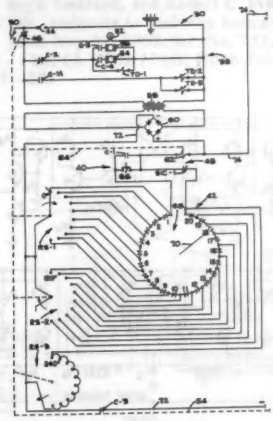
speed range. The desired time lag between the voltage pulses and thus the desired timing advance is obtained by selection of the appropriate angular spacing between the magnets, and by selection of the location of the variable reluctance zones.

3,591,850

IRRIGATION CONTROL SYSTEM

Carl E. Holm, Pleasanton, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed June 27, 1969, Ser. No. 837,023
Int. Cl. H01h *7/00*
U.S. Cl. 307—141 **4 Claims**



A control system for opening and closing multiple irrigation valves. At desired time intervals a repeating timer actuates a stepping relay which drives pairs of rotary switches that sequentially energize independent pairs of conductors in a five-conductor control cable assembly. Voltage and polarity discriminating control plugs are employed to tap the control cable at each valve to be actuated.

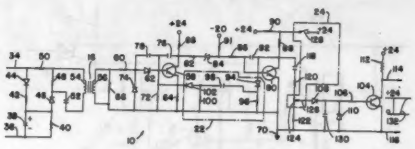
3,591,851

STRUCTURE FOR PROVIDING A CONTROL SIGNAL IN RESPONSE TO A LOW AMPLITUDE SHORT DURATION SIGNAL VARIATION

Robert W. Drushel, Farmington, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Filed Oct. 3, 1966, Ser. No. 583,875
Int. Cl. H02h *7/20*
U.S. Cl. 307—202 **4 Claims**

A highly sensitive and completely stable circuit for and method of detecting low amplitude, short duration direct current signal variations associated with sparking between an electrode tool and a conducting workpiece in an electrochemical machining process or the like and substantially immediately producing a control signal in response to a predetermined detected signal level is disclosed. The structure includes a polarity discriminating sensing circuit for initially detecting the signal variations, an amplifier circuit for providing an amplified and stabilized signal substantially immediately on sensing a signal variation of the proper polarity and output circuit for providing an output signal in response



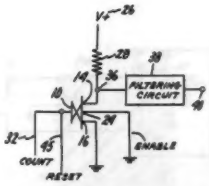
to a selected portion of the amplified and stabilized signal, including means for selecting the level of the selected signal portion operable to provide the output signal, means for cutting off the amplified and stabilized signal when the selected level is below a predetermined minimum and means responsive to a number of amplified and stabilized signals, which have a level below the selected level received in a predetermined time for providing an output signal.

3,591,852

NONVOLATILE FIELD EFFECT TRANSISTOR COUNTER

Arthur C. M. Chen, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 21, 1969, Ser. No. 792,486
Int. Cl. H03k *25/02*
U.S. Cl. 307—225 **14 Claims**



Conductor-insulator semiconductor field effect transistors characterized by a nonuniform charge in the insulator under a large voltage bias at room temperatures are employed as nonvolatile counters wherein the count per stage is controlled by the amplitude and/or pulse width of large voltage count pulses applied to the transistor. The charge switching characteristic produces a generally cumulative time-voltage shift in the transistor transfer characteristic and the transistor switches from a substantially nonconductive state to a stable conductive state after a predetermined number of count pulses have effected a shift in the transfer characteristic to a constantly applied DC bias. The transistor then can be reset to a different switching count for identical applied count pulses by a variation in the amplitude and/or period of the reset voltage applied to the transistor gate electrode. Preferably the transistors are cascaded to produce a nonvolatile, highly accurate counter having a minimum number of semiconductive devices per stage.

3,591,853

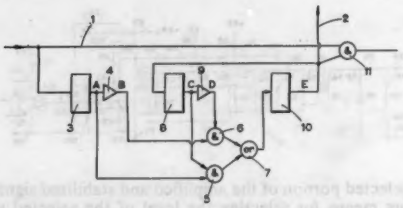
FOUR PHASE LOGIC COUNTER

Denis Brain Jarvis, Eastleigh, England, assignor to U.S. Philips Corporation

Filed Feb. 14, 1969, Ser. No. 799,419
Claims priority, application Great Britain, Feb. 16, 1968, 7758/68
Int. Cl. H03k *23/08*
U.S. Cl. 307—225 **3 Claims**

A divide by two counter using four phase logic is provided in which the counter consists of a pair of half-shift register

stages. The first half-shift register stage contains the countin line for the logic signal. Each of said first and second stages is followed by an invertor; the outputs of which supplies a first and second AND gate. The outputs of said first and second stages also respectively supply said second and first AND



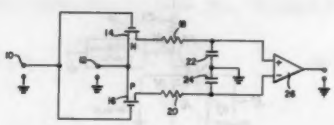
gates; the combined outputs of the two AND gates supply a third half shift register stage. The output of said third half-shift register stage forms an output of the counter which is also fed back to the second half-shift register stage at the same time supplies an output to a third AND gate which is also connected to the countin line to provide the countout.

3,591,854

SIGNAL PHASE AND MAGNITUDE MEASUREMENT CIRCUIT

Charles N. Cole, Daytona Beach, Fla., assignor to General Electric Company

Filed Dec. 30, 1968, Ser. No. 787,833
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **5 Claims**



A known reference signal is gated through N and P field effect transistors in a push-pull configuration by a measured signal of the same frequency but approximately 90° out of phase to a pair of capacitors across the transistors. The capacitors acquire a charge proportional to the deviation from 90° which is applied to a differential amplifier. If both signals are in phase and the reference is used as the gating signal, an output proportional to the magnitude of the measured signal is achieved.

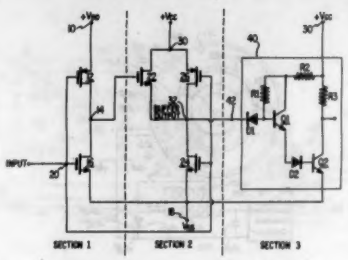
3,591,855

COMPLEMENTARY FIELD-EFFECT TRANSISTOR BUFFER CIRCUIT

Jack Allen Dean, Flemington, and Robert Charles Heuner, Bound Brook, both of, N.J., assignors to RCA Corporation

Filed Apr. 17, 1969, Ser. No. 816,964
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **14 Claims**

A buffer circuit to interface between a complementary field-effect transistor (FET) circuit operated at a first voltage level and a load circuit operated at a second voltage level having a lower value than said first voltage level. The buffer includes an input stage and an output stage. The output stage includes two transistors of opposite conductivity connected in parallel to clamp the buffer output point to the positive terminal of the second power supply and a third transistor to clamp the buffer output point to the negative terminal of the second supply. The input stage includes a complementary inverter operated at the first voltage level which in response to output signals from the FET circuit generates complementary



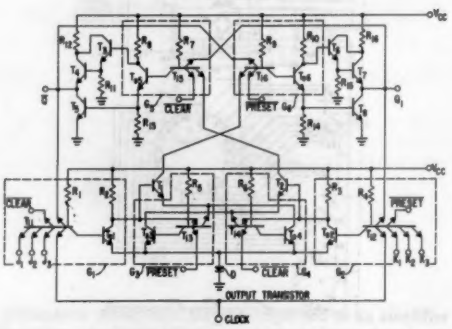
signals used to enable either the parallel combination of the two transistors or the third transistor.

3,591,856

J-K MASTER-SLAVE FLIP-FLOP

Jeffrey C. Kalb, San Jose, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 7, 1967, Ser. No. 681,281
Int. Cl. H03k *17/00*
U.S. Cl. 307—247 **9 Claims**



Disclosed is a J–K master-slave flip-flop system having a simplified gating system and in which no clock pulse connections are required for the transfer transistors. Clock pulses are fed to input gates. Additional clocks may be added by tying the input gates to clock lines. The clock pulse are ANDed together at the input gate so that the J–K master-slave flip-flop system is suitable for use in large arrays.

3,591,857

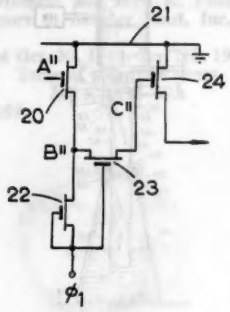
MOST TRANSLATING AND GATING CIRCUIT

Denis Brian Jarvis, Eastleigh, England, assignor to U.S. Philips Corporation

Filed Feb. 14, 1969, Ser. No. 799,359
Claims priority, application Great Britain, Feb. 16, 1968, 7757/68
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **2 Claims**

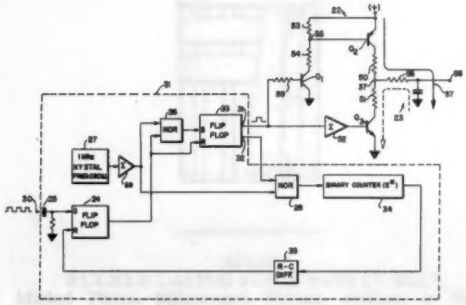
A circuit for a four phase logic system wherein the necessity for a separate bias voltage is eliminated by connecting the

source-drain path of an input MOST to the source-drain path of a higher impedance second MOST and by connecting both



the gate and drain terminals of the second MOST to a source of clock pulses.

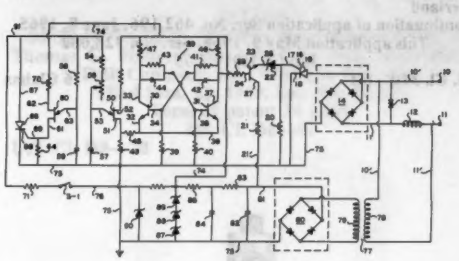
3,591,858
PULSE RATE TO ANALOG CONVERTER
William R. Boyd, Oakland, and Robert C. Franklin, San Jose, both of, Calif., assignors to Beckman Instruments, Inc.
Filed May 31, 1968, Ser. No. 733,626
Int. Cl. H03k *17/00; H03b 3/04*
U.S. Cl. 307—255 **2 Claims**



A system for providing an analog output signal whose average amplitude is proportional to the frequency of an input signal including a constant pulse width generator responsive to the input signal for providing a series of pulses each of which has a predetermined duration at the same frequency as the input signal and an averaging circuit responsive to the series of pulses for providing an analog signal whose average amplitude is a function of the duty cycle of the constant pulse width generator.

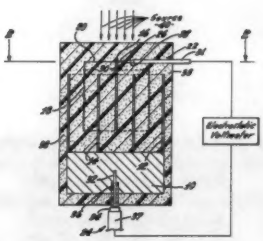
3,591,859
SWITCHING CIRCUIT
Grady T. Porter, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 26, 1969, Ser. No. 836,920
Int. Cl. H03k *17/26, 17/00*
U.S. Cl. 307—293 **2 Claims**

An electronic circuit employed to change an operation from one parallel train to another and to instigate a separate



operation in that parallel train temporarily removed from service.

3,591,860
GAMMA-ELECTRIC CELL
Henry T. Sampson, 807 Center St., El Segundo, Calif., and George H. Miley, 1913 Galen Court, Champaign, Ill.
Filed July 22, 1968, Ser. No. 746,525
Int. Cl. G21d *7/00*
U.S. Cl. 310—3 **9 Claims**



The present invention relates to a gamma-electric cell for producing a high-output voltage from a source of radiation wherein the gamma-electric cell includes a central collector constructed of a dense metal and with the central collector encapsulated within an outer layer of dielectric material. A further conductive layer is then disposed on or within the dielectric material so as to provide for a high voltage output between the conductive layer and the central collector upon the reception of radiation by the gamma-electric cell. The invention also includes the use of a plurality of collectors radiating from the central collector throughout the dielectric material so as to increase the collection area and thereby increase the current and/or output voltage. Other aspects of the invention are directed to the method of producing a high voltage output gamma-electric cell by encapsulation techniques using a dielectric material which is castable and curable so as to provide for an intimate contact between the collectors and the dielectric material which surrounds and encapsulates the collectors. Other aspects of the method of encapsulation of the present invention include the use of specific dielectric materials and also the elimination of trapped gases within the dielectric material.

3,591,861

PIEZO-ELECTRIC MEASUREMENT TRANSDUCER WITH AMPLIFIER

Hans Conrad Sonderegger, Sulz-Rickenbach, Switzerland, assignor to Messrs Kistler Instrument AG, Winterthur, Switzerland

Continuation of application Ser. No. 462,196, June 8, 1965. This application May 9, 1968, Ser. No. 728,082
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 6 Claims

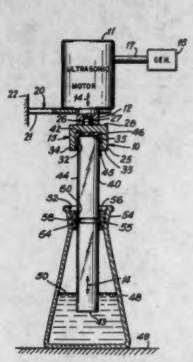
This invention relates to a piezoelectric assembly having a amplifier and a piezoelectric transducer of similar dimensions coupled together with a mechanical connector.

3,591,862

ULTRASONIC MOTOR TRANSMISSION SYSTEM

Ronald H. Winston, New York, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,146
Int. Cl. H01v 7/00, 9/00
U.S. Cl. 310—8.2 21 Claims



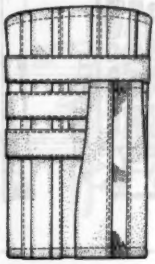
The invention covers a system for driving transmission members, particularly made from glass and of a relatively small diameter, at an ultrasonic rate in which the transmission member is coupled to a base member by means of an epoxy, swaging, or a combination thereof. In addition an ultrasonic motor system including an ultrasonic motor, and transmission assembly for use with a receptacle is also disclosed.

DESIGNS

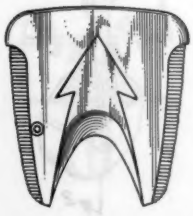
JULY 6, 1971

221,045
EAR EMBRACING HEARING AID OR SIMILAR ARTICLE
Barkman C. McCabe and John R. Foss, Los Angeles, Calif., assignors to Burglar Blast, Inc., Los Angeles, Calif.
Filed Oct. 30, 1969, Ser. No. 19,850
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—259

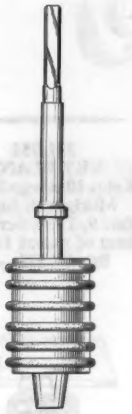
221,046
PROTECTIVE MITT
Daniel Gold, 6740 De Gaspe Ave., Montreal 327, Quebec, Canada
Filed Nov. 28, 1969, Ser. No. 20,306
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—361



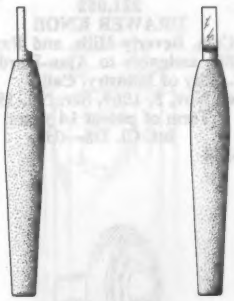
221,047
BUCKLE CASING FOR A SAFETY BELT
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Filed Sept. 19, 1969, Ser. No. 19,212
Claims priority, application France Mar. 19, 1969
Term of patent 14 years
Int. Cl. D2—*08*
U.S. Cl. D2—408



221,048
STOP ROTATION MECHANISM ATTACHMENT
Thomas G. Bixby, Valparaiso, Ind., assignor to Phillips Drill Company, Inc., Michigan City, Ind.
Filed Sept. 16, 1969, Ser. No. 19,157
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—70



221,049
SHARPENER FOR ICE SKATE BLADES
Michael J. Marotta, 85 Plymouth Road, Manhasset, N.Y. 11030
Filed Oct. 27, 1969, Ser. No. 19,749
Term of patent 14 years
Int. Cl. D8—*02;* D7—*03*
U.S. Cl. D8—91



221,050
HANDBAG FRAME
Karl H. Nos, 58 Steinheimer Str., 6453 Seligenstadt, Hesse, Germany
Filed Sept. 2, 1969, Ser. No. 18,948
Claims priority, application Germany Mar. 26, 1969
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—125

221,051
KEY BLANK
Kiyoshi Kato, 20 Saugo Iouri 2-chome, Moriguchi, Japan
Filed Mar. 9, 1970, Ser. No. 21,778
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—136

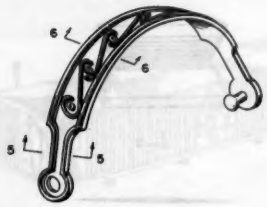
221,052
DRAWER KNOB
Lawrence McCain, Beverly Hills, and Raymond Tintary, Covina, Calif., assignors to Ajax Hardware Manufacturing Corp., City of Industry, Calif.
Filed Nov. 3, 1969, Ser. No. 19,913
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—144

221,053
PENDANT-TYPE DRAWER PULL
Lawrence McCain, Beverly Hills, and Raymond Tintary, Covina, Calif., assignors to Ajax Hardware Manufacturing Corp., City of Industry, Calif.
Filed Nov. 3, 1969, Ser. No. 19,915
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—169

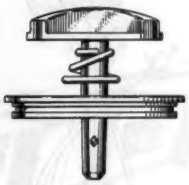
221,054
DOOR KNOCKER
Ade Bethune, Newport, R.I., assignor to Terra-Sancta Creations, Inc., Philadelphia, Pa.
Filed Apr. 8, 1970, Ser. No. 22,320
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—177

221,055
PROTECTIVE CAP FOR ELECTRICAL OUTLET
Henry Nakagawa, San Carlos, Calif. (% Prodeco, 521 Marine View Ave., Belmont, Calif. 94002), and Richard D. Low, % R. D. Low Associates, P.O. Box 1636, San Mateo, Calif. 94401
Filed Dec. 5, 1969, Ser. No. 20,371
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—184

221,056
SHOWER CURTAIN HOLDER
Charles Minoff, Rockaway Park, N.Y., assignor to William L. Imershein and Charles Imershein, Valley Stream, N.Y.
Continuation-in-part of design application Ser. No. 13,281, Aug. 26, 1968. This application Sept. 19, 1969, Ser. No. 19,211
Term of patent 14 years
Int. Cl. D8—*03;* D9—*99*
U.S. Cl. D8—248

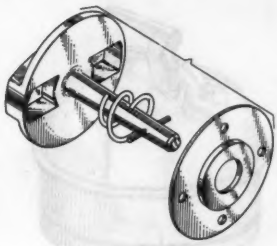


221,057
HOOD LATCH UNIT
Robert L. Townsend, Sherman Oaks, Calif., assignor to A. C. Stearns Co.
Filed Oct. 30, 1969, Ser. No. 19,853
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—265



221,058
HOOD LATCH UNIT
Robert L. Townsend, Sherman Oaks, Calif., assignor to A. S. Stearns Co.
Filed Oct. 30, 1969, Ser. No. 19,854
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—265

221,059
HOOD LATCH UNIT
Robert L. Townsend, Sherman Oaks, Calif., assignor to A. C. Stearns Co.
Filed Oct. 30, 1969, Ser. No. 19,855
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—265

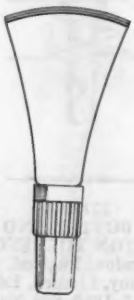


221,060
HOOD LATCH UNIT
Robert L. Townsend, Sherman Oaks, Calif., assignor to A. C. Stearns Co.
Filed Oct. 30, 1969, Ser. No. 19,857
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—265

221,061
COMBINED BOTTLE AND DISPLAY CARTON THEREFOR
Roger Alan Ford, London, England, assignor to Charles Mackinlay & Company, Limited, Edinburgh, Scotland
Filed Oct. 3, 1969, Ser. No. 19,416
Claims priority, application Great Britain Aug. 8, 1969
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12

221,062
SAFETY CONTAINER FOR VOLATILE LIQUIDS
Charles K. Huthsing, Jr., Libertyville, Ill.
(1685 Shermer Road, Northbrook, Ill. 60062)
Filed Jan. 29, 1970, Ser. No. 21,144
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—175

221,063
SQUEEZE TUBE/DISPENSER
Donald Simmonite, Hertford, and Keith Tattersall, Hunsdon, England, assignors to T. J. Smith & Nephew Limited, Kingston-upon-Hull, England
Filed Dec. 16, 1969, Ser. No. 20,520
Claims priority, application Great Britain June 17, 1969
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—194

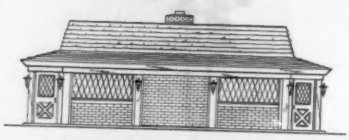


221,064
COMBINED MEASURING CUP AND COVER FOR A BOTTLE CAP
Phillip F. Warren, Old Bridge, N.J., assignor to Richardson-Merrell Inc., New York, N.Y.
Filed Sept. 24, 1969, Ser. No. 19,279
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—261

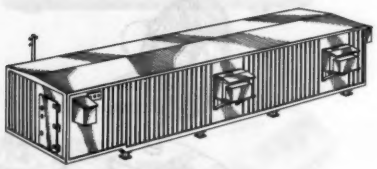
221,065
CONTAINER CAP
David Donaldson, Wilmington, Del., assignor to Container Corporation of America, Chicago, Ill.
Filed Apr. 9, 1969, Ser. No. 16,643
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—284

221,066
BUILDING
Jerrold W. Ross, Rte. 1, Box 48, Ridgefield, Wash. 98642
Filed June 18, 1969, Ser. No. 17,753
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

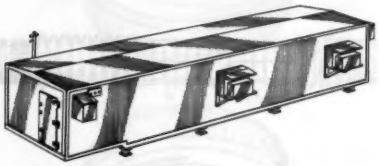
221,067
BUILDING
Jack R. Butz, Tulsa, Okla., assignor to John K. Selby, Tulsa, Okla.
Filed Nov. 24, 1969, Ser. No. 20,257
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



221,068
TELEPHONE EXCHANGE APPARATUS
Nobuo Yasuhara, Kudamatsu, and Yasuyuki Tanaka and Masamitsu Seki, Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 2, 1970, Ser. No. 22,207
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

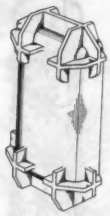


221,069
TELEPHONE EXCHANGE APPARATUS
Nobuo Yasuhara, Kudamatsu, and Yasuyuki Tanaka and Masamitsu Seki, Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 2, 1970, Ser. No. 22,210
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



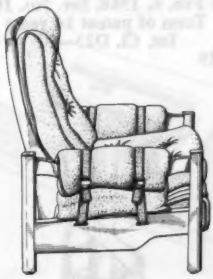
221,070
STEERING HANDLE
Richard A. Munter, Mora, Minn., assignor to Boatel Company, Inc., Mora, Minn.
Filed Jan. 22, 1970, Ser. No. 21,031
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—30

221,071
END CUSHIONING COVER FOR PACKAGES OR THE LIKE
William E. Jolin, Jr., Cortland, N.Y., assignor to SCM Corporation
Filed Nov. 13, 1969, Ser. No. 20,055
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—254



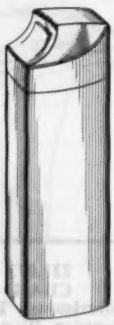
221,072
BENCH OR SIMILAR ARTICLE
Knut Arenhold, Kehl am Rhine, Germany, assignor to Melude S.A., Fribourg, Switzerland
Filed May 28, 1969, Ser. No. 17,393
Claims priority, application Switzerland Feb. 14, 1969
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—11

221,073
CHAIR
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, West Springfield, Mass.
Filed Jan. 21, 1970, Ser. No. 21,021
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—11



221,074
INSECT TRAP OR SIMILAR ARTICLE
John S. Levey, 12160 Victory Blvd., Los Angeles, Calif. 91606
Filed Jan. 19, 1970, Ser. No. 20,984
Term of patent 14 years
Int. Cl. D22—*09*
U.S. Cl. D22—19

221,075
WATER SOFTENER CABINET
William Jackson Marsh, Garden Grove, Calif., assignor to Robert Marsh Enterprises, Inc., Santa Ana, Calif.
Filed Dec. 29, 1969, Ser. No. 20,667
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



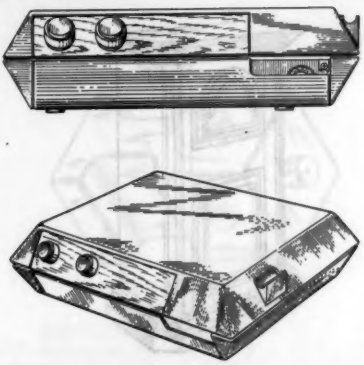
221,076
VALVE MEMBER
Gilbert Schwartzman, New York, N.Y., assignor to Dab-O-Matic Corporation
Filed Feb. 6, 1968, Ser. No. 10,465
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

221,077
TABLE FAN
Petrus Joannes Stut, Drachten, Netherlands, assignor to United States Philips Corporation
Filed Oct. 30, 1969, Ser. No. 19,844
Claims priority, application Switzerland May 8, 1969
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155

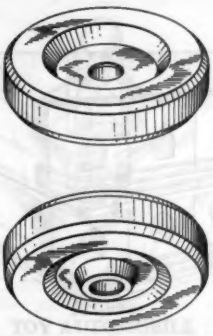
221,078
PIPE
Peter H. Seckel, Upper Montclair, and Franklin Dick, New York, N.Y., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Apr. 30, 1970, Ser. No. 22,728
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

221,079
INTERDENTAL STIMULATOR
Joseph C. Muhler, Indianapolis, Ind., assignor to Plastek Company, Sturgis, Mich.
Filed Mar. 14, 1969, Ser. No. 16,250
Term of patent 14 years
Int. Cl. D24—*03*; D28—*01*
U.S. Cl. D24—1

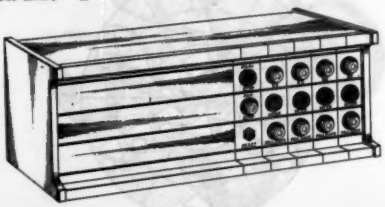
221,080
DENTAL ULTRASONIC UNIT
Morison S. Cousins, Plainview, N.Y., assignor to Cavitron Corporation
Filed Oct. 10, 1969, Ser. No. 19,506
Term of patent 14 years
Int. Cl. D24—*03*; D7—*06*
U.S. Cl. D24—1



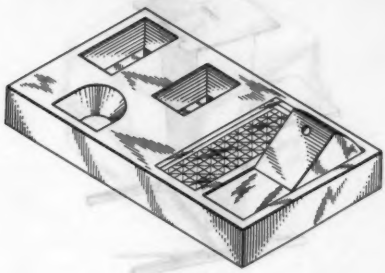
221,081
RECTIFIER
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Aug. 18, 1969, Ser. No. 18,726
Term of patent 14 years
Int. Cl. D13—*99, 02*
U.S. Cl. D26—1



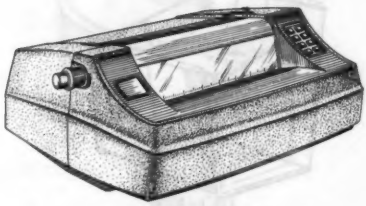
221,082
MALFUNCTION DETECTOR
Paul E. Brefka, Southborough, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.
Filed Nov. 7, 1969, Ser. No. 19,980
Term of patent 14 years
Int. Cl. D10—*11*; D13—*03*
U.S. Cl. D26—1



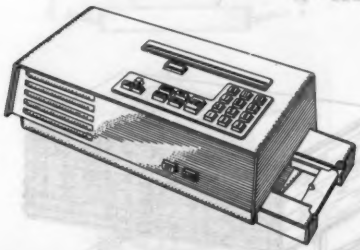
221,083
ELECTRIC OUTLET UNIT
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Continuation-in-part of design application Ser. No. 16,784, Apr. 16, 1969. This application Feb. 10, 1970, Ser. No. 21,371
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



221,084
ELECTRONIC IMPACT DATA PRINTER
Gregory F. Fossella, Marshfield, Mass., assignor to Nortec Computer Devices, Inc., Ashland, Mass.
Filed Nov. 26, 1969, Ser. No. 20,287
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

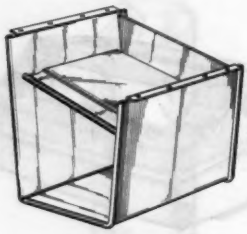


221,085
PORTABLE DATA RECORDER
Gunther W. Newman, Phoenicia, N.Y., assignor to Varifab, Inc., Greenwich, Conn.
Filed Mar. 10, 1970, Ser. No. 21,833
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

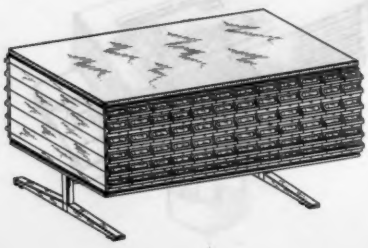


221,086
STAND FOR A COMPUTER PRINTER
Gregory F. Fossella, Marshfield, Mass., assignor to Nortec Computer Devices, Inc., Ashland, Mass.
Filed Nov. 26, 1969, Ser. No. 20,283
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—3

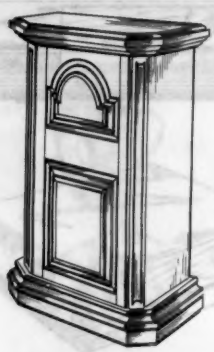
221,087
BOOK BOX FOR STUDENT DESK
Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Filed Sept. 24, 1969, Ser. No. 19,270
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—11



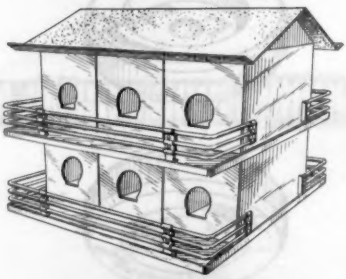
221,088
FILING CABINET
Charles M. Huck, New Brunswick, N.J., assignor to Estey Corporation, Red Bank, N.J.
Original design application Sept. 25, 1968, Ser. No. 13,713, now Patent No. 215,307. Divided and this application Sept. 18, 1969, Ser. No. 19,204
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—19



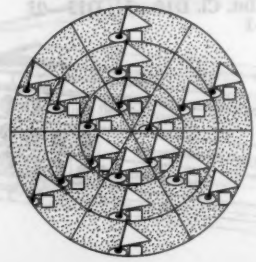
221,089
CONSOLE CABINET
Harry Bergman, Glencoe, Ill., assignor to Butler Specialty Company, Chicago, Ill.
Filed Oct. 16, 1969, Ser. No. 19,585
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—19



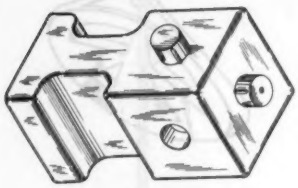
221,090
PURPLE MARTIN BIRD HOUSE
Arthur E. Vail, Griggsville, Ill., assignor to Trio Manufacturing Company, Griggsville, Ill.
Filed Feb. 5, 1970, Ser. No. 21,276
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—3



221,091
GAME BOARD
Frank C. Nowicki, 1144 Dionne, St. Paul, Minn. 55113
Filed Apr. 27, 1970, Ser. No. 22,643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

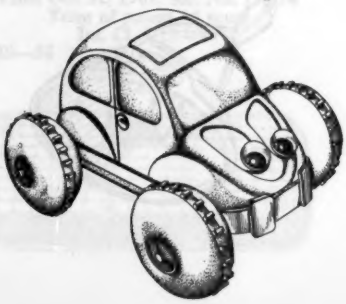


221,092
COMPONENT FOR A MULTI-PIECED BLOCK TOY OR THE LIKE
Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed Aug. 8, 1969, Ser. No. 18,587
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

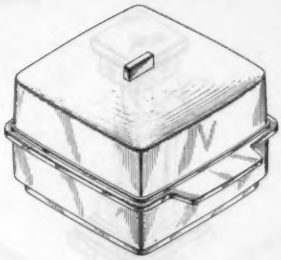


221,093
ACCESSORY FOR TOY TOP
Anthony D. Miller, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 25, 1970, Ser. No. 22,045
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

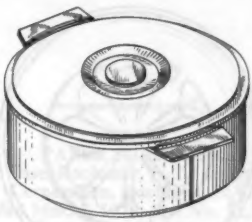
221,094
TOY AUTOMOBILE
Donald Greenwood, Akron, Iowa, assignor to Cragstan Industries, Inc., New York, N.Y.
Filed Mar. 30, 1970, Ser. No. 22,100
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



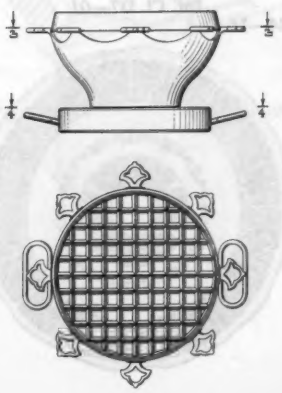
221,095
ELECTRICAL FOOD STEAMER
Malen Z. Tevolitz, Monroe, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 28, 1970, Ser. No. 23,193
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



221,096
ELECTRICAL FOOD WARMER
Malen Z. Tevolitz, Monroe, Conn., and Manfred K. Hegemann, Nyack, N.Y., assignors to Sperry Rand Corporation, New York, N.Y.
Filed May 28, 1970, Ser. No. 23,194
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

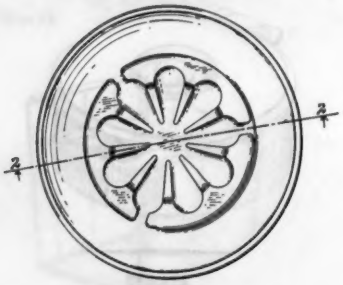


221,097
HIBACHI
Joseph B. Stier, Brooklyn, N.Y., assignor to Styson Inc., New York, N.Y.
Filed May 14, 1970, Ser. No. 22,985
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

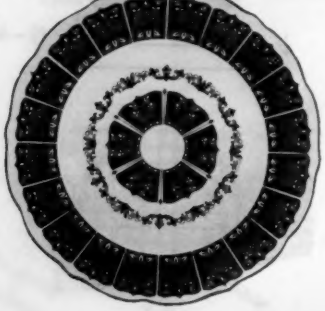


221,098
TIMER
Mel Appel, Livingston, and Martin Schnur, Fort Lee, N.J., assignors to Gemco-Ware Inc., Freeport, Long Island, N.Y.
Filed Apr. 15, 1970, Ser. No. 22,442
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D42—7

221,099
SAUCER
Pat Alparone, 2894 Mission St., San Francisco, Calif. 94110
Filed Oct. 20, 1969, Ser. No. 19,618
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9

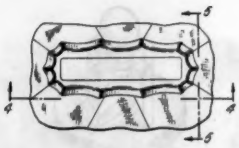


221,100
DINNER PLATE OR SIMILAR ARTICLE
Michael J. Szymanski, Camillus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Oct. 15, 1969, Ser. No. 19,564
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



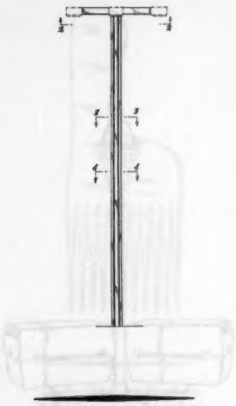
221,101
PENDANT
Thomas G. Pacitti, 220 Mountain St., Philadelphia, Pa. 19148
Filed Aug. 17, 1970, Ser. No. 24,537
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17

221,102
UMBRELLA CAP AND COVER
Heinz Weber, Hilden, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada
Continuation-in-part of design application Ser. No. 20,258, Nov. 24, 1969. This application July 29, 1970, Ser. No. 24,206
Claims priority, application Germany Sept. 5, 1969
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3



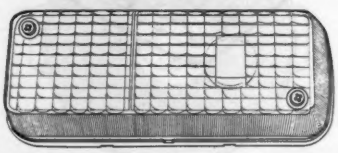
221,103
DENTAL OPERATING LIGHT
Daryl Raymond Beach and Sadayasu Ota, Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Mar. 13, 1970, Ser. No. 21,895
Claims priority, application Japan Dec. 19, 1969
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20

221,104
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 20, 1969, Ser. No. 19,635
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

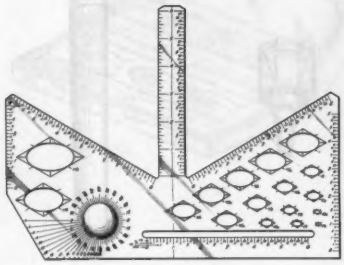


221,105
FRONT PANEL FOR TRANSOM LIGHT FOR BOATS OR THE LIKE
Donald E. Stewart, Grand Rapids, Mich., assignor to Attwood Corporation, Lowell, Mich.
Filed Sept. 11, 1969, Ser. No. 19,102
Term of patent 14 years
Int. Cl. D12—*99*; D26—*02*
U.S. Cl. D48—32

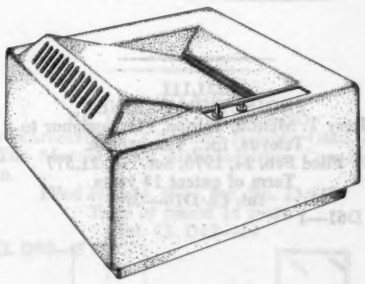
221,106
FRONT LAMP FOR AUTOMOBILES
Michel Tixier, Billancourt, France, assignor to Regie National des Usines Renault, Billancourt, Hauts-de-Seine, France
Filed Oct. 31, 1969, Ser. No. 19,874
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D48—32



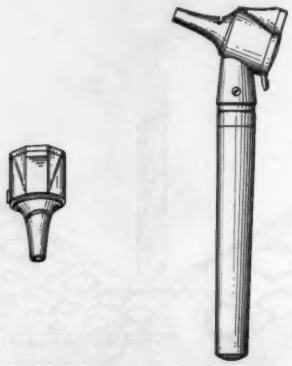
221,107
DRAFTING INSTRUMENT FOR DRAWING SCALED ORTHOGRAPHIC VIEWS AND AXONOMETRIC VIEWS
David D. Miller, 259 S. Robertson Blvd., Beverly Hills, Calif. 90213
Filed Jan. 13, 1970, Ser. No. 20,905
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6



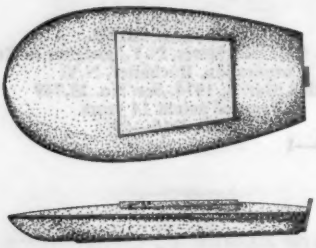
221,108
PAPER SHREDDER
Stanley E. Case, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Mar. 5, 1970, Ser. No. 21,749
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1



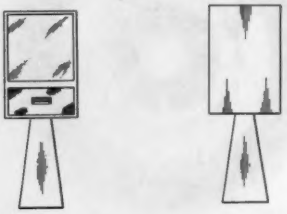
221,109
OTOSCOPE
Helmut A. Heine, Herrsching, Upper Bavaria, Germany, assignor to Optotechnik G.m.b.H., and Propper Manufacturing Company, Inc.
Filed June 12, 1970, Ser. No. 23,464
Term of patent 14 years
Int. Cl. D24—*02;* D16—*08*
U.S. Cl. D57—1



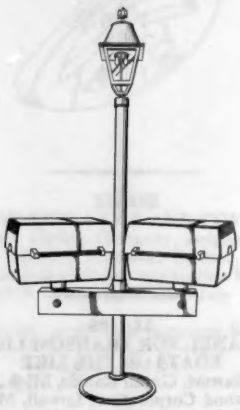
221,110
DUCK BOAT OR THE LIKE
Melton E. Valentine, Jr., 2823 Mayview Road, Raleigh, N.C. 27607
Filed Sept. 5, 1969, Ser. No. 19,036
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



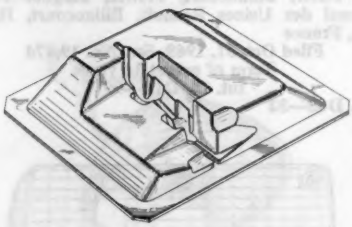
221,111
PROJECTION CABINET
Jerry T. Melton, Tampa, Fla., assignor to Televue, Inc., Tampa, Fla.
Filed Feb. 24, 1970, Ser. No. 21,577
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



221,112
COMBINED LAMP AND DOUBLE GRILL
Peyton L. Gunnels, Columbus, Ga., assignor to W. C. Bradley Co., Columbus Iron Works Division, Columbus, Ga.
Filed Jan. 19, 1970, Ser. No. 20,971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D81—10

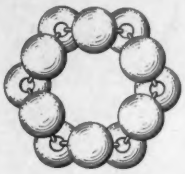


221,113
STAND FOR UNDERWATER DRAINAGE APPARATUS
Leonard Kurtz, Woodmere, Edward Hallstein, Smithtown, Robert Bidwell, Melville, and Sidney Mishkin, Great Neck, N.Y., assignors to Deknatel Inc., Queens Village, N.Y.
Filed Feb. 18, 1970, Ser. No. 21,484
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

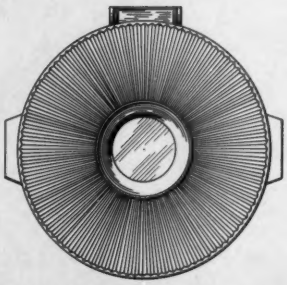


221,114
COMB
Arthur Rogovin, 245 Rumsey Road, Yonkers, N.Y. 10701
Filed June 17, 1970, Ser. No. 23,524
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

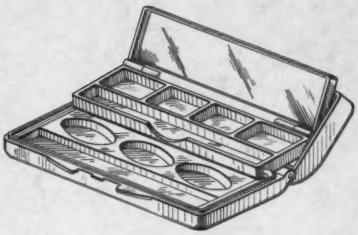
221,115
PONYTAIL RING
Nathan L. Solomon, P.O. Box 550, Englewood, N.J. 17631
Filed Apr. 3, 1968, Ser. No. 11,284
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



221,116
HEATER HOUSING FOR HAIR CURLERS OR SIMILAR ARTICLE
Henry J. Talge, Kansas City, and Marvin W. Litman, Prairie Village, Kans., assignors to The Songrand Corporation
Filed Mar. 31, 1970, Ser. No. 22,143
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



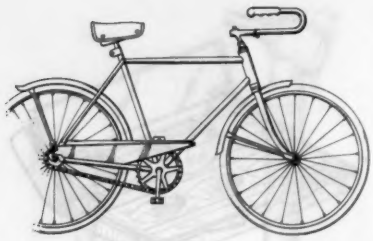
221,117
TRAVEL KIT
Arthur S. Jacobs, Stamford, Conn., assignor to Valve Corporation of America, Greenwich, Conn.
Filed Apr. 6, 1970, Ser. No. 22,250
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



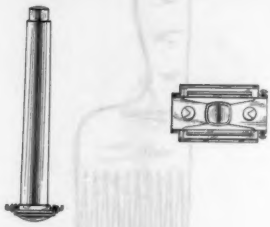
221,118
KEY TAG
Ernest Henry Chambers, 28a Hall St., Moonee Ponds, Victoria, Australia
Filed Sept. 10, 1969, Ser. No. 19,092
Term of patent 14 years
Int. Cl. D3—*99*; D8—*03*
U.S. Cl. D87—8

211,119
BICYCLE CHAIN GUARD
Viktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed June 24, 1970, Ser. No. 23,647
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—5

221,120
BICYCLE
Viktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed Aug. 20, 1970, Ser. No. 24,613
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—8



221,121
SAFETY RAZOR
Jose Bassat Jerusalmi, Barcelona, Spain, assignor to Bassat S.A., Barcelona, Spain
Filed Oct. 13, 1969, Ser. No. 19,524
Claims priority, application Spain Apr. 11, 1969
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JULY, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott, Don W., to Recorded Sales Visual Presentations, Inc. System for selectively controlling multiple operations. 3,591,734, Cl. 179-100.2

Abbott, Harold W., to General Electric Company. Color television demodulator. 3,591,707, Cl. 178-5.4

Abbott, Thomas I.; Smith, Donald A.; and Cunningham, Robert H., to Eastman Kodak Company. Lithographic element and novel polymers contained therein. 3,591,386, Cl. 96-114.

Abel, Edward Peter: *See—*
Brust, David Philip; Minsk, Louis Morton; and Abel, Edward Peter,3,591,387.

Abercrombie, Lawrence W.; Saaty, Nabil N.; and Sayigh, Adnan A. R., to Upjohn Company, The. High density cellular polyurethane elastomer. 3,591,532, Cl. 260-2.5

Abermeth, Hubert: *See—*
Keylwert, Hans; and Abermeth, Hubert,3,590,790.

Acheson Industries, Inc.: *See—*
Ough, Thomas D., 3,591,097.

Ackerman, Bernard, to Electro-Catheter Corporation. Catheters. 3,590,822, Cl. 128-404.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Attack and decay circuitry for electronic musical instrument. 3,591,702, Cl. 84-1.26

Adams, Budd B.: *See—*
Hoffman, David; Sadowy, Roman, Jr.; and Adams, Budd B.,3,591,789.

Adams, Clark E.; and Kimberlin, Charles N. Jr., to Esso Research and Engineering Company. Two-stage desulfurization utilizing hydrogen in the second stage reaction. 3,591,489, Cl. 208-211.

Adams, Thomas F. Vertically adjustable loading deck for transport containers. 3,591,246, Cl. 312-306.

Adams, Vincent A.: *See—*
Foley, Francis H., Jr.; and Adams, Vincent A.,3,590,699.

Adaptronics, Inc.: *See—*
Barron, Roger L., 3,591,778.

Aday, Roy W., Jr.; and Lu, Maoyeh, to Beckman Instruments, Inc. Torque isolating mounting structure. 3,591,288, Cl. 356-74.

Adcraft Mfg. Co.: *See—*
Wallace, Frank J., 3,590,665.

Addison, George T., to Coal Industry (Patents) Limited. Cutters for mineral mining machines. 3,591,235, Cl. 299-1.

Addressograph-Multigraph Corporation: *See—*
Gammeter, Harry F., 3,590,733.

Admiral Corporation: *See—*
Johnson, Roy V., 3,590,596.

Adrian, Philip R., to Fruit Harvesting Co., Inc. Guide with energy-absorbing baffles. 3,590,981, Cl. 198-72.

Ahren, Bengt Johan Anders, to Saab Aktiebolag. Fluid ejector particularly for cushion levitated devices. 3,591,084, Cl. 239-224.

Aichhorn, Johann; Rietzler, Erich; and Kress, Dieter, to Mapal Dr. Kress KG. Reamer with replaceable cutting blade. 3,591,305, Cl. 408-161.

Aijala, Sulo A., to Intricate Machine & Engineering Inc. Means for mounting a hand saw in a retoothing or sharpening machine. 3,590,664, Cl. 76-43.

Ainsworth, Donald; and Blewett, Trevor, to Vallance & Co. (Morley) Limited. Method for continuously mixing powders and oils. 3,591,145, Cl. 259-6.

Air Factors, Inc.: *See—*
Lambert, Robert R., 3,590,546.
Lambert, Robert R., 3,590,719.

Air Products and Chemicals, Inc.: *See—*
Culp, John E., Jr.; and Schwartz, Howard E., 3,591,157.
Geist, Jacob M.; Paul, Roy A.; and Thorogood, Robert M., 3,590,475.

Air Reduction Company: *See—*
Carden, Douglas D., 3,591,090.

Air Reduction Company, Incorporated: *See—*
Leeds, Morton W., 3,591,511.
Leeds, Morton W., 3,591,512.

Airheart, Franklin B., to Airheart Products, Inc. Closed loop caliper type disc brake and support means therefor. 3,590,961, Cl. 188-73.4

Airheart Products, Inc.: *See—*
Airheart, Franklin B., 3,590,961.

Aisin Seiki Company Limited: *See—*
Yamaguchi, Hiroji; Murakami, Noboru; and Hirozawa, Koichiro, 3,590,663.

Akamatsu, Hiroo; Takechi, Saburo; and Ichimori, Masuo, to Omron Tateisi Electronics Co. (Tateisi Denki Kabushikikaisha). Automatic flushing device for toilet facilities. 3,590,397, Cl. 4-100.

Akamatsu, Takashi: *See—*
Kenmochi, Hirohito; Kanda, Tatsuo; Hotta, Seiji; and Akamatsu, Takashi,3,591,610.

Akashi, Goro: *See—*
Kono, Yuichi; Akashi, Goro; and Fujiyama, Masaaki,3,591,414.

Akesson, Karl Gustav Bertil; and Noresson, Nils Gunnar, to Broderna Akessons Maskinfabrik AB. Arrangement in an apparatus having a stationary and a movable press platen, particularly an injection molding machine. 3,590,436, Cl. 18-30.

Akiyama, Hideaki: *See—*
Kakiuchi, Tokusaburo; and Akiyama, Hideaki,3,591,267.

Aktiebolaget Bofors: *See—*
Olsson, Tore Bertil Reinhold; and Nilsson, Ake Valentin, 3,591,713.

Aktiebolaget Svenska Precisionsverktyg: *See—*
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Aktiengesellschaft Brown, Boveri & Cie: *See—*
Kaser, Alfred, 3,591,306.
Wunsch, Alfred, 3,591,313.

Al, Rene Jan, to Dow Chemical Company, The. Curable polyepoxides produced by metal hydride or alkoxide catalyst. 3,591,554, Cl. 260-47.

Albinger, Harry, Jr.: *See—*
Marble, Chester B.; and Albinger, Harry, Jr.,3,591,737.

Alburn, Harvey E.: *See—*
Fenichel, Richard L.; Grant, Norman H.; and Alburn, Harvey E.,3,591,574.

Alcoa of Great Britain Limited: *See—*
Webb, Cyril J., 3,590,545.

Aldrich Chemical Company, Inc.: *See—*
Hopps, Harvey Byron; and Biel, John Hans, 3,591,594.

Allais, Andre, to Roussel-UCLAF. Novel carbonates. 3,591,612, Cl. 260-397.45

Allemand, Pierre: *See—*
Bonnel, Bernard; Allemand, Pierre; and Versmee, Pierre,3,591,542.

Allen, Dillis V. Helical drive. 3,591,241, Cl. 305-8.

Allen, George, to Cardinal Container Corporation. Erectable and collapsible drawer receiving cabinet. 3,591,245, Cl. 312-258.

Allen, Rudolph. Mechanically programmable marine transport cargo handling and stowage system. 3,591,023, Cl. 214-14.

Alley, Raymond L., to American Warming & Ventilating, Inc., The. Fire damper latch. 3,591,221, Cl. 292-230.

Allied Chemical Corporation: *See—*
Ameen, Jameil; Horner, Charlie A., Jr.; and Harrison, Floyd A., 3,591,641.
Beckham, Leland J., 3,591,359.
Schonberg, Elliott A.; Thomson, Charles B.; and Bacha, John, 3,591,445.
Twilley, Ian C.; and Lazarus, Stanley D., 3,591,625.

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Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Alps Electric Co., Ltd.: *See—*
Ohkita, Masao, 3,591,750.

Alside, Inc.: *See—*
Epstein, George; and Mollman, Robert E., 3,590,541.

Alsup, Michael J., to Eastman Kodak Company. Photographic elements and processes employing photosensitive polymers. 3,591,377, Cl. 96-35.1

Altman, Joseph H., to Eastman Kodak Company. Process for making positive-working relief plate. 3,591,378, Cl. 96-35.1

Alton, Ahdor H.; and Kohn, Mitchell I., to Gulton Industries, Inc. Proportioning temperature control apparatus. 3,591,077, Cl. 236-69.

Aluminum Company of America: *See—*
Schrecker, Howard Dale; and Heffner, Robert Edwin, 3,591,037.

Alvarez, Francisco, to Syntex Corporation. Process for preparing alpha-acyloxy ketone steroids. 3,591,582, Cl. 260-239.55

Amalgamated Dental Company Limited, The: *See—*
Denereaz, Andre, 3,591,370.

Ameen, Jameil; Horner, Charlie A., Jr.; and Harrison, Floyd A., to Allied Chemical Corporation. Production of dialkyl ethers of polyalkylene glycols. 3,591,641, Cl. 260-615.

American Air Filter Company, Inc.: *See—*
Byers, Thomas W.; and Rivers, Richard D., 3,590,562.

American Associated Companies: *See—*
Swenson, Gerald G., 3,591,237.

American Can Company: *See—*
Fietzer, Ivan A.; and Hanseter, Ronald Alois, 3,591,120.

Mooring, Alexander Walker; and Simmons, Harley Earl, 3,591,038.

American Crucible Products, Co.: *See—*
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American Cyanamid Company: *See—*
Cantrall, Margot Louise; Sassiver, Martin Leon; and Shepherd, Robert Gordon, 3,591,693.
Ellenbogen, Leon; and Highley, Derek Rowland, 3,591,678.

American Home Products Corporation: *See—*
Fenichel, Richard L.; Grant, Norman H.; and Alburn, Harvey E., 3,591,574.
Jones, Robert C.; and Edgren, Richard A., 3,591,688.
Kim, Dong H.; and Santilli, Arthur A., 3,591,589.
Lefebvre, Yvon, 3,591,583.

American Optical Corporation: *See—*
Harris, George J., 3,590,811.

American Packaging Corporation, The: *See—*
Watts, Ridley, Jr.; and Berry, John F., 3,590,434.

American Specialty Foods, Inc.: *See—*
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American Standard, Inc.: *See—*
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Hollander, Milton B.; Buell, Victor P.; and Judelson, Norman B., 3,590,393.
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American Warming & Ventilating, Inc., The: *See—*
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Amerock Corporation: *See—*
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Ametek, Inc.: *See—*
Luger, Julian; and Summers, Stanley E., 3,591,127.

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Hollenton, Frank, 3,590,975.
Hooper, Harry Allison; Hollenton, Frank; and Brackmann, Warren Arthur, 3,591,044.
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Coleman, James A. Feeler gage having plastic feelers. 3,590,490, Cl. 33-168.

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Miles, Gilbert DeWayne, 3,591,054.
Nalbach, John Chard, 3,591,018.

Colin, Pierre; and Guibert, Victor, to Melle-Bezons. Process for treating polysaccharides produced by fermentation. 3,591,578, Cl. 260-209.

Collier, John Covell; and William, David Rickards, to AMP Incorporated. Card reader. 3,591,773, Cl. 235-61.11

Collins & Aikman Corporation: *See—*
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Collins, David J.; and Harris, Guy H., to Dow Chemical Company, The. Flotation of sulfide ores. 3,590,998, Cl. 209-166.

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Conductron Corporation: *See—*
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Conney, Allan H.; and Burns, John J., to Burroughs Wellcome Co. Method of treating jaundice in animals. 3,591,696, Cl. 424-254.

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Conway, Fred T. Apparatus for positioning piano hammers for drilling. 3,591,303, Cl. 408-108.

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Cooke, Claude E., Jr., to Esso Production Research Company. Method of determining fluid saturations in reservoirs. 3,590,923, Cl. 166-252.

Cooper, Roydon B., to Pall Corporation. Differential pressure-responsive signalling device and a filter assembly having same. 3,591,003, Cl. 210-90.

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Copelin, Harry B., to Du Pont de Nemours, E. I., and Company. Separation of chloroform and/or ethyl acetate and/or methylethyl ketone from vinyl acetate by extractive distillation. 3,591,463, Cl. 203-61.

Coquin, Gerald A.; Meitzler, Allen H.; and Warner, Arthur W., Jr., to Bell Telephone Laboratories, Incorporated. Lithium niobate transducers. 3,591,813, Cl. 310-9.5

Corbin, Earl James. Conversion accessory for vending machines. 3,591,046, Cl. 221-155.

Cordier, James, to Hardinge Brothers, Inc. Radius turning attachment for lathes. 3,590,672, Cl. 82-12.

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Chase, John R.; and Rimer, John A., 3,590,467.
Gossie, Albert M.; and Hausheer, Lawrence B., 3,591,035.

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Couture, John H. Computer device with interchangeable parameter scaling. 3,591,790, Cl. 235-193.

Cox, Edwin Dexter, to Johns-Manville Corporation. Flexible core material in skin and core laminates. 3,591,443, Cl. 161-37.

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Cronan, Philip J., 50% to Mandel, Rubin. Portable spray means for dual liquids. 3,591,089, Cl. 239-304.

Cross, Lloyd G., to Sonovision, Inc. Apparatus for producing a visual display. 3,590,681, Cl. 84-464.

Crouch, Willie W.; and Childers, Clifford W., to Phillips Petroleum Company. Method of removing hydrocarbons from the surface of an aqueous body. 3,591,494, Cl. 210-40.

Crowson, Fred B.; and Previte, Richard A., to Bell Telephone Laboratories, Incorporated. Automatic program test circuit for data sets. 3,591,719, Cl. 178-69.

Crowther, Harold, to Lucas, Joseph, (Industries) Limited. Liquid filtering equipment. 3,591,007, Cl. 210-234.

Csathy, Denis G., to RayGo, Inc. Combination fire tube and water tube boiler. 3,590,785, Cl. 122-7.

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Cushman, Robert Holbrook, to Western Electric Company. Fusion bonding. 3,591,755, Cl. 219-50.

Cutler, Royce L. Music voicing circuit deriving an imput from a conventional musical instrument and providing voiced musical tones utilizing the fundamental tones from the conventional musical instrument. 3,591,699, Cl. 84-1.11

Cutter, Joseph T.; Freeman, Don G.; and Van Blerkom, Richard, to International Business Machines Corporation. Real time digital fourier analyzer. 3,591,784, Cl. 235-152.

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Cutts, Ernest M., Sr.; and Cutts, Ernest M., Jr. Berry harvester. 3,590,566, Cl. 56-330.

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Dalum, Clarence E. Collapsible sign stand. 3,591,116, Cl. 248-166.

d'Anka, Blaise, to Crescent Metal Products, Inc. Elevator rack. 3,591,015, Cl. 211-126.

Darby, David A. Teaching and evaluation machine. 3,590,497, Cl. 35-9.

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Davies, Stanley; and Canton, Haydn Leigh, to Imperial Chemical Industries Limited. Process for the production of a continuous filamentary yarn. 3,591,672, Cl. 264-167.

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Day, Douglas W.: *See—*
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Day, Ronald H., to Industrial Covers, Inc., and Sargent Industries, Inc. Aspirator apparatus for bag inflation system. 3,591,314, Cl. 417-179.

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Dean, Jack Allen; and Heuner, Robert Charles, to RCA Corporation. Complementary field-effect transistor buffer circuit. 3,591,855, Cl. 307-237.

Debely, Pierre-Etienne: *See—*
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Dehnert, Johannes; Grosch, Walter; and Gnad, Gergard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dyeing polyamides with monoazo dyes containing acid groups. 3,591,324, Cl. 8-41.

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Del Faro, Gordon; and Groves, Leo C., to R&R Four-Slide Corporation. Swaging attachment for forming machines. 3,590,625, Cl. 72-452.

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Dennison, John J., to Arrow-Hart, Inc. Lever operated switch with tiltable contact actuator and flexible contacts. 3,591,747, Cl. 200-153.

De Palma, James J., to Eastman Kodak Company. Rear projection screen. 3,591,253, Cl. 350-126.

De Pew, Thomas N. Loading rack. 3,590,752, Cl. 108-53.

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Dessart, Louis. Process for fabricating an offensive and defensive projectile head, and projectile head produced according to this process. 3,590,451, Cl. 29-1.21

Detaint, Jacques, to Commissariat a l'Energie Atomique. Neutron-generating targets. 3,591,812, Cl. 250-84.5

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Devries, Dale Byron, to Texas Instruments, Incorporated. Method for making ambient atomsphere isolated semi-conductor devices. 3,590,479, Cl. 29-578.

De Vries, Jan Roelof Jochem Hendrik, to Industriele Onderneming Wavin N.V. Method for manufacturing a plastic block bag. 3,590,698, Cl. 93-35.

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Dietsch, Jacques, to Societe anonyme des Etablissements. System for synchronising timing devices. 3,590,573, Cl. 58-24.

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Di Grande, Santo, to True Plastic Corporation. De-nesting machine. 3,591,041, Cl. 221-11.

Di Stefano, Albert. Combination garbage grinder and pump. 3,591,095, Cl. 241-41.

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Dokos, Sophocles J.; Vieceli, Joseph L.; and Lorenzana, Moises B., to Sunbeam Corporation. Coffee maker. 3,590,723, Cl. 99-289.

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Donald, Philip Joseph, to RCA Corporation. Projection of color-coded B and W transparencies. 3,591,274, Cl. 353-20.

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Drushel, Robert W., to Ex-Cell-O Corporation. Structure for providing a control signal in response to a low amplitude short duration signal variation. 3,591,851, Cl. 307-202.

Dubinsky, Emanuel. Replacement cover and its application to an outdoor chair. 3,590,901, Cl. 160-327.

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Duguay, John B. Transversely pivoted windows. 3,590,530, Cl. 49-161.

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Early, Jack D.; and Chupp, John P., to Monsanto Company. Controlling southern army worm with 3-iodo-3',4', 5-trichlorosalicylanilide. 3,591,684, Cl. 424-230.

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Ebisu, Takeshi. Oscillating cloth folder having movable cloth hanger. 3,591,166, Cl. 270-79.

Ebnother, Anton; and Bastian, Jean-Michel, to Sandoz Ltd., a/k/a Sandoz AG. Certain-2-hydroxyloweralkyl-tetrahydro-2-H- indeno[1,2-c]pyridines and 2-hydroxy loweralkyl- hexahydro-2-H-indeno [1,2-c]pyridin 5-ols. 3,591,595, Cl. 260-294.7

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Hasten, Mark; and Lobash, Floyd, to General Mills, Inc. Extrusion apparatus with a cutting mechanism having means to stop the cutter at a predetermined position. 3,590,678, Cl. 83-593.

Hatcher, Frank Lynn. Tools for split pipe collars. 3,591,142, Cl. 254-79.

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Biniecki, Stanislaw; Chachula, Stanislaw; Jozwiak, Helena; Ludwicki, Zbigniew; Labedzki, Stefan; Pietrzak, Wiktor; Pieta, Stanislaw; Paradowski, Stanislaw; Izdebski, Josef, deceased; Izdebska, Alicja Maria; and Izdebska, Barbara Anieszka; heirs,3,591,588.

Izdebska, Barbara Anieszka: *See—*
Biniecki, Stanislaw; Chachula, Stanislaw; Jozwiak, Helena; Ludwicki, Zbigniew; Labedzki, Stefan; Pietrzak, Wiktor; Pieta, Stanislaw; Paradowski, Stanislaw; Izdebski, Josef, deceased; Izdebska, Alicja Maria; and Izdebska, Barbara Anieszka; heirs,3,591,588.

Izdebski, Josef: *See—*
Biniecki, Stanislaw; Chachula, Stanislaw; Jozwiak, Helena; Ludwicki, Zbigniew; Labedzki, Stefan; Pietrzak, Wiktor; Pieta, Stanislaw; Paradowski, Stanislaw; Izdebski, Josef, deceased; Izdebska, Alicja Maria; and Izdebska, Barbara Anieszka; heirs,3,591,588.

Jackson, Geoffrey, to Hawker Siddeley Dynamics Limited. Temperature monitoring apparatus using photochromic heat sensor. 3,591,810, Cl. 250-83.

Jackson, George E., to Union Carbide Corporation. Sheer warp knit garment and method for making same. 3,590,603, Cl. 66-177.

Jackson Recreation Products, Inc.: *See—*
Thomas, Charles F.; and Thomas, Allen C., 3,590,952.

Jackson, William M., to Hydro-Vac, Inc. Steering unit for barges and the like. 3,590,766, Cl. 114-151.

Jacobsen, Paul W.: *See—*
Beninger, Robert L.; Hill, Grant, Jr.; Oertle, Lawrence C., Jr.; and Jacobsen, Paul W.,3,591,019.

Jacobson, Sava W.: *See—*
Neubauer, Fred H.; and Jacobson, Sava W.,3,591,700.

Jaeckel, Georg: *See—*
Wiebicke, Kalus; and Jaeckel, Georg,3,590,789.

Jaffe, Bernard, to Clevite Corporation. Ferroelectric composition. 3,591,504, Cl. 252-62.9

Jagenberg-Werke AG: *See—*
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Jakobsen, Robert E. Kjer, to Daystrom Virtue, Inc., mesne. Edge bandings for articles of furniture. 3,590,754, Cl. 108-161.

James, Glenn D. Method and apparatus for pressurizing steam. 3,591,317, Cl. 230-54.

Jamesbury Corporation: *See—*
Miles, Michael E.; and Donnelly, James F., 3,591,133.

Jamieson, Glen M., to Commonwealth of Australia, The. High-hysteresis shock absorber. 3,591,164, Cl. 267-140.

Janetos, Nicholas S.; Marzocchi, Alfred; and Leary, David E., to Owens-Corning Fiberglas Corporation. Method for treating and impregnating glass fiber bundles for reinforcement of elastomeric materials. 3,591,357, Cl. 65-3.

Japanese National Railways: *See—*
Yaku, Tadao; Isizaki, Shogo; Fujiwara, Kunihiko; Ohzeki, Kazuya; and Yamaki, Tatsumi, 3,591,724.

Jarmufejlesztesi Intezet: *See—*
Rasko, Istvan, 3,590,693.

Jarvi, Reino A., to Simpson Timber Company. High molecular weight /low molecular weight phenol-formaldehyde curtain coating adhesive composition. 3,591,535, Cl. 260-14.

Jarvis, Denis Brian, to U.S. Philips Corporation. Four phase logic counter. 3,591,853, Cl. 307-225.

Jarvis, Denis Brian, to U.S. Philips Corporation. MOST translating and gating circuit. 3,591,857, Cl. 307-251.

J. C. Enterprises: *See—*
Thomas, Orrin H., 3,591,053.

Jeanise, Leo. Combination of valve seat base and replaceable valve seats, and meteod of securing together and in place. 3,590,837, Cl. 137-15.

Jefferson Chemical Company, Inc.: *See—*
Godfrey, Norman Bell; and Schulze, Heinz, 3,591,556.

Jenkins, Peter Gordon: *See—*
Sharp, David N.; and Jenkins, Peter Gordon,3,591,192.

Jeski, Rudolph S. Emergency vehicle signs. 3,590,506, Cl. 40-129.

Jet Spray Cooler, Inc.: *See—*
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Jetter, Harold M. Portable shower assembly. 3,590,398, Cl. 4-154.

Jiffy Manufacturing Co.: *See—*
Gerard, George, 3,590,695.

Jirka, Howard F., to Zenith Radio Corporation. Automatic frequency control circuit. 3,591,716, Cl. 178-7.3

Jobin, Jean-Jacques: *See—*
Goudreau, Roger; Jobin, Jean-Jacques; Goudreau, Fernand; Roy, Yvon; and Vaccaro, Luigi,3,590,994.

John, Kamar Percy: *See—*
Muller, Eckart; and John, Kamar Percy,3,591,490.

Johnels, Arne, to I.W.S. Nominee Company Limited. Continuous scouring process. 3,591,326, Cl. 8-139.

Johns-Manville Corporation: *See—*
Cox, Edwin Dexter, 3,591,443.
Rankine, Adam Smith, 3,591,393.
Sadler, Thomas Harry, 3,591,099.
Winterhalter, Frank Arthur; and Raab, Ronald Buxton, 3,591,580.

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Johnson, A., & Co. H.A.B.: *See—*
Ilon, Bengt Erland, 3,591,195.

Johnson, Carl, to Nalco Chemical Company. Method of cleaning ovens. 3,591,416, Cl. 134-2.

Johnson Gage Company, The: *See—*
Johnson, Lowell C., 3,590,492.

Johnson, Lowell C., to Johnson Gage Company, The. Screw thread gage with segmental and envelope gaging means. 3,590,492, Cl. 33-199.

Johnson, Richard C.; and Commell, John M., to Foster Wheeler Corporation. Prefabricated laminated insulated wall panels. 3,590,540, Cl. 52-309.

Johnson, Roy V., to Admiral Corporation. Side-by-side refrigerator-freezer construction. 3,590,596, Cl. 62-275.

Johnson Service Company: *See—*
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Johnson, Theodore H., Jr.; Locke, Charles H.; Robock, Paul V.; and Suelflow, Raymond D., to International Business Machines Corporation. Method of manufacturing a pulse transformer package. 3,590,480, Cl. 29-605.

Johnston, James David, to Pfizer, Chas., & Co. Inc. Treatment of chronic respiratory disease in poultry with 1,2,3,4-tetrahydrophenazine-5,10- dioxides and derivatives thereof. 3,591,694, Cl. 424-250.

Johnston, Mack S., to Republic Corporation, mesne. Tapping device for beer kegs and the like. 3,591,057, Cl. 222-400.7

Johnston, Mack S., to Republic Corporation, mesne. Tapping device for beer kegs and the like. 3,591,058, Cl. 222-400.7

Johnston, Philip; and Hurt, Peter J., to Lehigh Fluid Power, Inc. Coupling fitting with sliding valve. 3,591,132, Cl. 251-146.

Jolly, Jean: *See—*
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Joly, Robert: *See—*
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Jones, Clifford M.; and Harnden, John D., Jr., to General Electric Company. Traveling sign controlled by logic circuitry and providing a plurality of digital display effects. 3,590,508, Cl. 40-132.

Jones, Frederick R., to Plessey Company Limited, The. Brush lifting gear for electrical machines. 3,591,820, Cl. 310-240.

Jones, James C.: *See—*
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Jones, Kenneth R., to Tennant Company, mesne. Ice resurfacing machine. 3,591,236, Cl. 299-24.

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Jones, Raymond F.: *See—*
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Jones, Robert C.; and Edgren, Richard A., to American Home Products Corporation. Method of preventing ovulation and composition therefor. 3,591,688, Cl. 424-239.

Jonnes, Nelson: *See—*
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Jorgen, Robert T.: *See—*
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Joyce, Ronald W.; Billingslea, Eugene E.; Sage, Leopold C.; and Marshall, Robert K., to Victor Comptometer Corporation. Air operated projectile firing apparatus. 3,590,512, Cl. 42-39.5

Jozwiak, Helena: *See—*
Biniecki, Stanislaw; Chachula, Stanislaw; Jozwiak, Helena; Ludwicki, Zbigniew; Labedzki, Stefan; Pietrzak, Wiktor; Pieta, Stanislaw; Paradowski, Stanislaw; Izdebski, Josef, deceased; Izdebska, Alicja Maria; and Izdebska, Barbara Anieszka; heirs,3,591,588.

Judd, William Frank, to Whesso Limited. Liquid flow control valves. 3,590,886, Cl. 141-198.

Judelson, Norman B.: *See—*
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Hollander, Milton; Buell, Victor; and Judelson, Norman B.,3,590,392.

Juhl, Daniel L., to Raybestos-Manhattan, Inc. Low density cork-asbestos felt and process of producing the same. 3,591,447, Cl. 161-155.

Julie, Loebe, to Julie Research Laboratories, Inc. Precision analog computer for multiplying and dividing. 3,591,791, Cl. 235-195.

Julie Research Laboratories, Inc.: *See—*
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Kaarlela, William T.: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Hiruma, Kenji, 3,590,683.
Kakiuchi, Tokusaburo; and Akiyama, Hideaki, 3,591,267.
Mikami, Nobunao, 3,590,709.
Yanagawa, Nobuyuki, 3,591,286.

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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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Kajino, Yukio: *See—*
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Kajitani, Sadayuki; Yokoyama, Masahiro; and Eguchi, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Main clutch with electric auxiliary clutch and brake. 3,590,967, Cl. 192-18.

Kajitani, Sadayuki; Yokoyama, Masahiro; and Kajino, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Fixed point stop mechanism for driven rotary machine. 3,590,969, Cl. 192-146.

Kakiuchi, Tokusaburo; and Akiyama, Hideaki, to Kabushiki Kaisha Ricoh. Sound head positioning device for small-sized cineprojector. 3,591,267, Cl. 352-29.

Kalb, Jeffrey C., to Texas Instruments, Incorporated. J-K Master-slave flip-flop. 3,591,856, Cl. 307-247.

Kalksma, Peter F.: *See—*
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Kameda, Nobuyuki: *See—*
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Kamimura, Kazuo: *See—*
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Kaminsky, Daniel; and Meltzer, Robert I., to Warner-Lambert Pharmaceutical Company. 1,4-Dihydro-1-substituted-6,7-methylenedioxy-4- oxo-3-quinoline carboxylic acid antibacterial agents. 3,591,697, Cl. 424-258.

Kammermayer, Wolfgang: *See—*
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Kamps, Edwin C.: *See—*
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Kanda, Tatsuo: *See—*
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Kanda, Yasuaki: *See—*
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Kantor, Itzhak, to Plasson Maagan Michael Industrial Ltd. Restricted oscillating type suspended poultry drinking fountain. 3,590,782, Cl. 119-81.

Kappeler, Otto; and Sudrow, Siegfried, to Efka-Werke Fritz Kiehn GmbH. Apparatus for and method of making filter rods for filter tip cigarettes. 3,590,675, Cl. 83-98.

Karbo, Richard S., to Leisure Group, Inc., The. Bow quiver. 3,591,062, Cl. 224-1.

Karl Mengele & Sohne: *See—*
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Karmas, George; and Mebane, Alexander, to Ortho Pharmaceutical Corporation. 4-(Substituted aryl) cyclohexenecarboxylic acids. 3,591,624, Cl. 260-473.

Kartaschoff, Peter; and Debely, Pierre-Etienne, to Laboratoire Suisse de Recherches Horlogeras. Atomic or molecular beam resonator having field concentrating means for the second state selicetor. 3,591,800, Cl. 250-41.3

Kaser, Alfred. Drilling device, particularly for gun and annular drilling. 3,591,301, Cl. 408-56.

Kaser, Alfred, to Aktiengesellschaft Brown, Boveri & Cie. Core borer. 3,591,306, Cl. 77-69.

Kaspar Winkler & Co., Inhaber Dr. F.A. Schenker-Winkler & Dr. R. Burkard- Schenker: *See—*
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Kathriner, Josef, to Sulzer Brothers Limited. Apparatus and method for operating a loom. 3,590,880, Cl. 139-192.

Katz, Helmut, to Siemens Aktiengesellschaft. Electric discharge vessel electrode structure of pyrolytic carbon discs. 3,591,822, Cl. 313-355.

Katz, Wolfgang. Apparatus for introducing rolling elements into cages of antifriction bearings. 3,590,459, Cl. 29-201.

Kauder, Otto S.: *See—*
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Kawall, Thomas R.; and Lawson, Lance C., to Stewart-Warner Corporation. Facsimile adjustment fixture. 3,591,717, Cl. 178-7.6

Kawamura, Nobuo; and Kamimura, Kazuo, to Nippon Electric Company, Limited. Method of manufacturing semiconductor elements and semiconductor integrated circuits. 3,591,423, Cl. 148-1.5

Kawasaki Steel Corporation: *See—*
Shimanaka, Hiroshi; Irie, Toshio; and Tanda, Toshikuni, 3,591,425.

Kawashima, Hideo: *See—*
Miyadera, Yasuo; Masuko, Tatuo; Muroi, Tadashi; Kikkawa, Michio; Noguchi, Hiroshi; Okada, Shinichi; and Kawashima, Hideo,3,591,557.

Kawashima, Junshi; and Kitamura, Hiroyuki, to Polyelectric Corporation. Method of manufacturing a temperature sensitive, electrical resistor material. 3,591,526, Cl. 252-511.

Kay, Edward L.: *See—*
Beckman, Joseph A.; Eberly, Kenneth C.; and Kay, Edward L.,3,591,548.

Kay, Irvin W.: *See—*
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Kazama, Seiji; and Doura, Fumihiro, to Takeda Chemical Industries, Ltd. Process of production of polyurethane elastomer from a mixture of a lactone polyester polyol and a low molecular weight aliphatic diol. 3,591,561, Cl. 260-77.5

Kearney & Trecker Corporation: *See—*
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Keighley, Charles, Jr. Clock and light-sensitive light control system for motor vehicles. 3,591,825, Cl. 315-82.

Keiner, Heinz, to Leitz, Ernst, G.m.b.H. Self-catching spool for tapelike record carriers. 3,591,102, Cl. 242-74.

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Kennedy, Peter D.; and Goldstein, Harold M., to Nibot Corporation. Processes for selectively plating one component of multi-component plastic articles and articles produced thereby. 3,591,352, Cl. 29-195.

Kent Engineering: *See—*
Runge, Glen V., 3,591,024.

Kenton, Henry Bruce. Switch actuator mechanism for use with bed-ridden patients. 3,591,739, Cl. 200-52.

Kerner, Herman J., to Collins & Aikman Corporation. Pre-dryer for carpet ranges. 3,591,151, Cl. 263-34.

Kerr, Edward O. Ther-A-Pedic Associates, Inc. Handle structure for bed springs and the like. 3,590,405, Cl. 5-345.

Kessler, Ertman Leonard, to I.G. Corporation. Industrial gas. 3,591,355, Cl. 48-197.

Kessler, Frank L.; and Kendall, Stephen F. Swimming pool coping. 3,590,400, Cl. 4-172.21

Keylwert, Hans; and Abermeth, Hubert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Contact-free oil seal for rotary piston internal combustion engines. 3,590,790, Cl. 123-8.01

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Kihs, Josef R., to Kohn Manufacturing Co. Method and apparatus for manufacture of wire clips. 3,590,883, Cl. 140-1.

Kikkawa, Michio: *See—*
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Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. 6-Dialkylaminoalkoxy-2-aryl-4-chloropyrimidines and 6-dialkylaminoalkylthio-2-aryl-4- chloropyrimidines. 3,591,589, Cl. 260-256.4

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Kimura, Goro; Noda, Eiichi; Takeuchi, Hideaki; and Tsukushiro, Koji, to Mitsui Toatsu Chemicals Incorporated. Process for producing phytic acid. 3,591,665, Cl. 260-983.

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Kingsley, Lewis A. Work supporting means and type bar setting mechanism in hot stamping machines. 3,590,732, Cl. 101-21.

Kinoshita, Shukuo; Matsuda, Iwao; Shiga, Akio; and Furukawa, Hideyuki, to Kyowa Hakko Kogyo Co., Ltd. Compound seasoning. 3,591,391, Cl. 99-140.

Kinsey, Albert C., Jr.: *See—*
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Kirchner, Henry P.; and Walker, Ralph E., to Kirchner, Henry P., mesne. Strengthening fully sintered alumina and titania articles by reheating in a fluorine atmosphere. 3,591,668, Cl. 264-65.

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Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation. Bearing elements. 3,591,243, Cl. 308-241.

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Koch, Wolfgang: *See—*
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Kodama, Yutaka; Kodama, Tsutomu; and Nakabayashi, Masao, to Toyama Chemical Co., Ltd. Process for the preparation of tri-substituted hydrocarbyl phosphates. 3,591,664, Cl. 260-973.

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Kohl, Karl. Method of knitting a double fabric on a warp knitting machine. 3,590,600, Cl. 66-87.

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Kolster, Wilhelm K., to Meridian Industries, Inc., mesne. Selector switch assembly. 3,591,740, Cl. 200-61.27

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Kono, Yuichi; Akashi, Goro; and Fujiyama, Masaaki, to Fuji Photo Film Company, Ltd. Method for producing a magnetic recording medium. 3,591,414, Cl. 117-237.

Kopecky, Milos T., to Honeywell Inc. Bio-medical body electrode. 3,590,810, Cl. 128-2.06

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Powell, Russell A.; and Schofield, Henry Z., 3,591,153.
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Kraft, Lisbeth M. Semi-solid nursing device. 3,590,819, Cl. 128-252.

Kramer, Kenneth C.; and Tobie, Harold N., to Lear Siegler, Inc. Automatic throttle control system for an aircraft. 3,591,110, Cl. 244-77.

Kramer, Margaret Strauss, to Miles Laboratories, Inc. Allergenic extract and process for preparing same. 3,591,677, Cl. 424-91.

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Leeds, Morton W., to Air Reduction Company, Incorporated. Corrosion inhibitor. 3,591,512, Cl. 252-148.

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Masaki, Kenji; and Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Apparatus for reducing hydrocarbon content of engine exhaust gases during deceleration of automobile. 3,590,792, Cl. 123-97.

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Mount, Ralph W. Pipe bending tool with improved angular indicator. 3,590,617, Cl. 72-34.
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Moyroud, Louis M. Photographic type composing apparatus. 3,590,705, Cl. 95-4.5
Mozzi, Henry J., Jr., to Stewart-Warner Corporation. Web coating control. 3,590,778, Cl. 118-8.
Mracek, Jaroslav, to Western Electric Company. Method and apparatus for expanding an array of articles. 3,590,462, Cl. 29-400.
M&T Chemicals Inc.: *See—*
Stareck, Jesse E.; and Smith, Philip J., Jr., 3,591,350.
Mudie, David Jeffrey. Radiant shrink tunnel. 3,591,767, Cl. 219-354.
Muller, Eckart; and John, Kamar Percy, to Metallgesellschaft Aktiengesellschaft. Process of separating pure aromatic hydrocarbons from hydrocarbon mixtures. 3,591,490, Cl. 208-313.
Muller, Wolf F., to United States Catheter & Instrument Corporation. Biopsy tool. 3,590,808, Cl. 128-2.
Multiplex Company: *See—*
Woollen, Charles E.; and Boehlow, Robert W., 3,590,855.
Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, to Furnier-und Sperrholzwerk, J. F., Jr., and Werz, R. G. Method and apparatus for molding containers. 3,590,428, Cl. 18-5.
Murakami, Noboru: *See—*
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Muraki, Takeshi: *See—*
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Murat, Adolf R. Golf swing training device. 3,591,185, Cl. 273-185.
Murata, Sanjiro. Ultra-miniaturized tape recorder. 3,591,186, Cl. 274-4.
Murata, Tomoji; and Yamaoka, Sadao, to Minolta Camera Kabushiki Kaisha. Automatic control device for electronic flash. 3,591,829, Cl. 315-151.
Murata, Yorihiro, to Carborundum Company, The. Ceramic compositions and methods of making. 3,591,527, Cl. 252-518.
Muroi, Tadashi: *See—*
Miyadera, Yasuo; Masuko, Tatuo; Muroi, Tadashi; Kikkawa, Michio; Noguchi, Hiroshi; Okada, Shinichi; and Kawashima, Hideo,3,591,557.
Murphy, James A.; and Lee, Charles Allen, to International Paper Company, mesne. Method and apparatus for conditioning and defibrating a web of paper pulp prior to air laying. 3,591,450, Cl. 162-265.
Murphy, Kelly. Article container and dispenser. 3,591,043, Cl. 221-64.
Murphy, Milo E. Tuned resonance mufflers. 3,590,945, Cl. 181-40.
Muto, Shigeaki: *See—*
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Mutzenberg, Arnold; and Widmer, Fritz, to Luwa AG. Thin film apparatus. 3,590,916, Cl. 165-94.
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Nagayoshi, Fumio: *See—*
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Naive, Joel A.; and Van Benschoten, Peter J., to Wavetek. Register incorporating unidirectional transfer means. 3,591,777, Cl. 235-133.
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Kodama, Yutaka; Kodama, Tsutomu; and Nakabayashi, Masao,3,591,664.
Nakagawa, Takeo: *See—*
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Nakamura, Mikio; and Mc Intosh, Lawrie G., to McGraw-Edison of Canada Limited. Combined handle and spout. 3,591,060, Cl. 222-475.
Nakanishi, Atsuo: *See—*
Fukuma, Noboru; Matsui, Kenichi; Nakai, Chiyouzi; Fujisaki, Yoshisato; Nakanishi, Atsuo; and Shima, Tsukasa,3,591,536.
Nakashima, Yoshikatu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Locking device. 3,590,611, Cl. 70-186.
Nalbach, John Chard, to Colgate-Palmolive Company. Carton lowering machine. 3,591,018, Cl. 214-6.
Nalco Chemical Company: *See—*
Johnson, Carl, 3,591,416.
Mc Donald, Myron T., 3,591,520.
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Neale, Denis Manktelow, to Columbia Broadcasting System, Inc., mesne. Method and apparatus for optically recording color picture information. 3,591,268, Cl. 352-45.
Neale, Denis Manktelow, to Ilford Limited. Method of printing positives from color negatives whose subjects integrate to blue. 3,591,375, Cl. 96-23.
Necchi S.p.A.: *See—*
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Needleman, Samuel. Photographic film and paper processing apparatus. 3,590,718, Cl. 95-89.
Neesbye-Hansen, Per. Lantern. 3,591,795, Cl. 240-10.6
Nef, Alfred, to Gebruder Buhler AG. Cold chamber pressure casting machine. 3,591,052, Cl. 222-64.
Neff, Gordon W.; Sambucetti, Carlos J.; and Tomko, John E., to International Business Machines Corporation. Glucose measuring system. 3,591,480, Cl. 204-195.
Neff, Gordon W.; Sambucetti, Carlos J.; and Tomko, John E., to International Business Machines Corporation. Silver-silver chloride electrode and method of making same. 3,591,482, Cl. 204-195.
Neher, Hans Hermann: *See—*
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Nehra, Samuel A.; Saad, Oscar C.; and LaBrecque, Raymond E. Aspirator tip. 3,590,820, Cl. 128-276.
Neil, Hugh G., to University of Tennessee Research Corporation, The. Fiber measurement. 3,591,294, Cl. 356-167.
Nelson, Forest, Jr. Comb and container assembly. 3,590,832, Cl. 132-136.
Nelson, Iver L., to Hoerner Waldorf Corporation. Band sealer. 3,591,441, Cl. 156-498.
Nelson, Robert A., to International Business Machines Corporation. Predicted iteration in decimal division. 3,591,786, Cl. 235-160.
Nerold, Karl, 'Vienna' Bekleidungs-und Waschefabrik Ges.m.b.H. Spot-welding machine for thermoplastically connecting the several components of interlining assemblies. 3,591,766, Cl. 219-243.
Ness, Peter; and Oliapuram, Antony, to Varta Aktiengesellschaft. Nickel-cadmium storage battery. 3,591,417, Cl. 136-24.
Nestler, Gilbert C., to Koppers Company, Inc. Ascension pipe lid opening mechanism. 3,591,036, Cl. 220-36.

Neubauer, Fred H.; and Jacobson, Sava W., to Warwick Electronics Inc. Switch operated tone control circuitry and amplifier for musical instruments. 3,591,700, Cl. 84-1.24

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Neumeyer, John L.: *See—*
Papanastassious, Zinon B.; and Neumeyer, John L.,3,591,603.

Neuspiel, Peter J., to FMC Corporation. Sewage treatment process and apparatus. 3,591,492, Cl. 210-7.

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New Nippon Electric Company Ltd.: *See—*
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Newland, Gordon C.: *See—*
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Newton, Arthur, to Texaco Trinidad, Inc. Process for alkylation of an isoparaffin with an olefin and with sulfuric acid-aromatic hydrocarbon complex reaction products. 3,591,654, Cl. 260-683.61

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Nichols, Henry L. Cotton bale handling and compressing system. 3,590,731, Cl. 100-215.

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Nippon Electric Company, Limited: *See—*
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Seki, Yasuo; Tanno, Koetsu; and Kurihara, Takayuki, 3,591,413.
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nishio, Kazuyo; Geshi, Osamu; and Sako, Junichi, to Daikin Kogyo Co., Ltd., and Toho Kasei Co., Ltd. Method of coating metal surfaces with a fluorine-containing polymer. 3,591,468, Cl. 204-35.

Nishitani, Yoshihisa: *See—*
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Nissan Jidosha Kabushiki Kaisha: *See—*
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Nissan Motor Company, Limited: *See—*
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Nitro-Nobel AB: *See—*
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Nitschmann, Robert; and Griehl, Wolfgang, to Inventa A.G. fur Forschung und Patentverwertung. Polyethylene terephthalate stabilized with sulfur. 3,591,550, Cl. 260-45.7

Nitto Chemical Industry Co., Ltd.: *See—*
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Nix, Joy R.; Sargent, Michael R.; and Kaarlela, William T., to General Dynamics Corporation. Composite material for making cutting and abrading tools. 3,590,472, Cl. 29-103.

Niznik, Emil J., to Bunker-Ramo Corporation, The. Digital clock seconds indicator. 3,590,571, Cl. 58-23.

Niznik, Emil J., to Bunker-Ramo Corporation, The. Digital clock. 3,590,572, Cl. 58-24.

Noaaod, Aathua D. Holder for cuff links and the like. 3,591,119, Cl. 248-309.

Nobukuni, Taneo; Yano, Nobumitsu; Fukushima, Masao; Mizuno, Aiko; Nagayoshi, Fumio; and Takada, Toyoharu, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of stabilizing an organic substance with 5- aminouracil and 5-aminocytosine and their derivatives. 3,591,521, Cl. 252-403.

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Nolte, Gunther, to Conrad Scholtz AG. Belt conveyor device with a belt guiding assembly cooperating with the outside of the conveyor belt. 3,590,984, Cl. 198-202.

Norbutas, Stanley R., to Signode Corporation. Sheet feeding apparatus. 3,591,167, Cl. 271-9.

Noresson, Nils Gunnar: *See—*
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North American Rockwell Corporation: *See—*
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McCahon, John O.; and Byrne, William J., 3,591,165.

Northcutt, Oren V. Air motor valve. 3,590,875, Cl. 137-630.14

Norton, Robert L., to Jet Spray Cooler, Inc. Mixing valve assembly for beverage dispensers. 3,591,055, Cl. 222-145.

Notaro, Vincent A.; and Selwitz, Charles M., to Gulf Research & Development Company. Process for preparing halogenated aromatics. 3,591,644, Cl. 260-650.

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Novotny, Charles J.: *See—*
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Nowicki, Casimir W., to Owens-Illinois, Inc. Apparatus for forming plastic articles. 3,590,426, Cl. 18-5.

Nusslein, Rudolf: *See—*
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N.V. Industrieele Handelscombinatie: *See—*
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Smulders, August Hendrik Maria, 3,590,589.

N. V. Hollandsche Draad-en Kabelfabriek: *See—*
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Nykopp, Erik A., to Oy Tampella Ab. Apparatus for feeding paper stock to a paper machine. 3,591,452, Cl. 162-343.

Oak Electro/Netics Corporation: *See—*
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Ocean Pollution Control, Inc.: *See—*
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O'Connor, John T.:*See—*
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O'Donnell, Patricia M., to United States of America, National Aeronautics and Space Administration. Corrosion resistant beryllium. 3,591,426, Cl. 148-6.3

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Ohkita, Masao, to Alps Electric Co., Ltd. Stopper plate mounting for pushbutton switch. 3,591,750, Cl. 200-172.

Ohkubo, Kinji; and Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Rapid stabilizing process for color photographic materials. 3,591,380, Cl. 96-55.

Ohmachi, Ryoji, to Santoku Kinzoku Kogyo Kabushiki Kaisha. Heat resisting corrosion resisting iron chromium alloy. 3,591,365, Cl. 75-124.

Ohta, Tsunetaro, to Tao Valve Company Limited, The. Copper alloy for use at high temperatures. 3,591,368, Cl. 75-134.

Ohzeki, Kazuya: *See—*
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Okada, Shinichi: *See—*
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Okuhashi, Tomomi; and Kumura, Kinichi, to Teijin Limited. Sewing thread. 3,590,570, Cl. 57-140.

Okuno, Yositosi: *See—*
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Saeman, Walter C., 3,591,336.

Olsson, Tore Bertil Reinhold; and Nilsson, Ake Valentin, to Aktiebolaget Bofors. Thermography equipment for producing a directly observable thermal picture. 3,591,713, Cl. 178-6.8

Olszewski, William F.; and Myers, Herbert, to Mobil Oil Corporation. Lubricant containing a hydroxy-substituted phosphine oxide. 3,591,501, Cl. 252-49.8

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Onishi, Akira; Anzai, Shiro; Ishikawa, Takao; Koga, Akira; Irako, Koichi; and Ishii, Motoki, to Bridgestone Tire Company Limited. Production of butadiene-styrene graft copolymers with a nickel carboxylic acid salt-boron tri- fluoride etherate-trialkylaluminum catalyst. 3,591,658, Cl. 260-880.

Onishi, Yukio. Thermostat for engine cooling water. 3,591,075, Cl. 236-34.

Ono, Shigeo, to Nippon Kogaku K.K. Set value indicating apparatus for single lens reflex camera. 3,590,703, Cl. 95-1.1

Onufer, George R., to Russell, Burdsall & Ward Bolt and Nut Co. Bearing fastener and assembly. 3,591,216, Cl. 287-93.

Oppenheimer, Frank L., to TRW Inc. Sequence and direction valve. 3,590,965, Cl. 192-3.

Oppermann, Robert A., to Nalco Chemical Company. Continuous microbial process. 3,591,455, Cl. 195-28.

O'Rear, Mac S. Domestic water mixing and distribution device. 3,591,083, Cl. 239-197.

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Orlandini, Pietro, to Rotodolor s.r.l. Acupuncturation device. 3,590,821, Cl. 128-329.

Orr, Harold W., to Phillips Petroleum Company. Base line compensation for chromatographic analyzer. 3,590,628, Cl. 73-23.1

Ort, Carl; Deininger, Kurt; and Kilgus, Alfred, to Eastman Kodak Company. Albada viewfinder including prismatic reflecting means defining an image. 3,590,682, Cl. 88-1.5

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Orund, Valdek J.; and Cugini, Edward T., to Shaffer Tool Works. Remote controlled oil well pipe shear and shut-off apparatus. 3,590,920, Cl. 166-55.

O'Shea, Francis X.; and Sage, Gordon P., to Uniroyal, Inc.Bis[(dialkylaminomethyl)hydroxybenzyl]sulfides. 3,591,637, Cl. 260-570.9

Oshima, Takeo: *See—*
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Oswald, Alexis A.: *See—*
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Otani, Junji: *See—*
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Othmer, Friedrich-Ernst, to U.S. Philips Corporation. Method of synchronizing a receiver. 3,591,720, Cl. 178-69.5

Ott, Hans, to Sandoz-Wander, Inc. Antidepressants methods and compositions of 4-phenyl-3,4-dihydroquinazolines. 3,591,695, Cl. 424-251.

Ott, Henry J. Velocipede with rocking seat. 3,591,196, Cl. 280-1.195

Otto, James C., to General Electric Company. Parametric amplifier employing self-biased non- linear diodes. 3,591,848, Cl. 307-88.3

Ough, Thomas D., to Acheson Industries, Inc. Conical roll mill. 3,591,097, Cl. 241-113.

Oury, Robert F., to Rotec Industries, Inc. Concrete conveyor. 3,590,983, Cl. 198-185.

Ouska, Ralph C.; and Smith, Frederick L., to FMC Corporation. Cartype conveyor chain. 3,590,745, Cl. 104-172.

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Biniecki, Stanislaw; Chachula, Stanislaw; Jozwiak, Helena; Ludwicki, Zbigniew; Labedzki, Stefan; Pietrzak, Wiktor; Pieta, Stanislaw; Paradowski, Stanislaw; Izdebski, Josef, deceased; Izdebska, Alicja Maria; and Izdebska, Barbara Anieszka; heirs, 3,591,588.

Pachter, John J., to Eaton Yale & Towne, Inc. Overload detecting mechanism for a lift truck. 3,591,030, Cl. 214-673.

Pacini, August J., to Purex Corporation. Method for recovering transtraumatic acid. 3,591,632, Cl. 260-537.

Paddock, Paul F.: *See—*
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Padowicz, Miron. Apparatus for tracing random geometrical figures. 3,590,488, Cl. 33-27.

Pako Corporation: *See—*
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Pall, David B.; and Keedwell, Cyril A., 3,591,010.

Pall, David B.; and Gross, Robert I. Tubular vortex air cleaner. 3,590,560, Cl. 55-457.

Pall, David B.; and Keedwell, Cyril A., to Pall Corporation. Filter having a microporous layer attached thereto. 3,591,010, Cl. 210-493.

Palmer, Austin Richard, to Baker Perkins, Incorporated. Moulding apparatus. 3,590,748, Cl. 107-15.

Palmquist, Philip V.; and Jonnes, Nelson, to Minnesota Mining and Manufacturing Company. Heat-reflective fabrics. 3,591,400, Cl. 117-3.3

Palsa, Helmut, to Siemens Aktiengesellschaft. Circuit arrangement for data processing telephone exchange installations with systems for message transmission. 3,591,722, Cl. 179-2.

Pantke, Heinz-Dieter; Pohl, Ulrich; and Trecker, Hermann, to Huttenwerk Oberhausen AG. Shaft furnace. 3,591,158, Cl. 266-25.

Papanastassious, Zinon B.; and Neumeyer, John L., to Little, Arthur D., Inc., mesne. 3(3-Indole)-lower-alkylamines. 3,591,603, Cl. 260-326.15

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Biniecki, Stanislaw; Chachula, Stanislaw; Jozwiak, Helena; Ludwicki, Zbigniew; Labedzki, Stefan; Pietrzak, Wiktor; Pieta, Stanislaw; Paradowski, Stanislaw; Izdebski, Josef, deceased; Izdebska, Alicja Maria; and Izdebska, Barbara Anieszka; heirs,3,591,588.

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Parker-Smith, Norman Neville; and Martinez, Pedro, to Marconi Company Limited, The. Multi-image television cameras. 3,591,706, Cl. 178-5.4

Parker, Tommy M.; and Ford, Anthony R., said Parker, Tommy M., assor to Dizack, Marvin, Grubman, Seymour, and Tabb, Stanford. Metering brake. 3,590,962, Cl. 188-111.

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Rosaen, Nils O., 3,591,002.

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Parks, Lawrence Roy; and Zenk, William Edward, to Procter & Gamble Company, The. Liquid hard surface cleaning compositions. 3,591,509, Cl. 252-137.

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Walker, James; and Westwood, Geoffrey W., to Foseco Fordath A.G. Production of foundry cores and molds. 3,590,902, Cl. 164-43.

Walker, Ralph E.: *See—*
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Wallace, Frank J., to Adcraft Mfg. Co. Automatic pin forming and inserting machine. 3,590,665, Cl. 79-1.

Walles, Wilhelm E., to Dow Chemical Company, The. N-chloro or bromo-2-oxazalidinones. 3,591,601, Cl. 260-307.

Walsh, John. Combination registering and counting mechanism. 3,590,484, Cl. 30-363.

Walsh, Joseph H.: *See—*
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Walton, Paul E., to SWD Machines, Inc. Coin handling apparatus. 3,590,833, Cl. 133-2.

Wang, Chun-Shan; and McGee, Thomas W., to Dow Chemical Company, The. 1,2-Dihydro-6-methyl-2-oxo-4-pyridyl esters of certain benzene sulfonic acids and derivatives thereof. 3,591,596, Cl. 260-294.8

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Watson, John T.; and Robinson, Kenneth, to Itek Corporation. Conical scan panoramic camera. 3,591,269, Cl. 352-69.

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Watts, Ridley, Jr.; and Berry, John F., to American Packaging Corporation, The. Package forming machine. 3,590,434, Cl. 18-19.

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Wham-O Mfg., Co.: *See—*
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Wilder, Harry D., to Ethyl Corporation. Pretreatment of vegetable delignification of the refined matter with chlorine dioxide. 3,591,451, Cl. 162-67.

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Wildi, Paul; and Seyler, Lesley L., to Gulf Energy & Environmental System, Inc. Threaded fastener and method of making the same. 3,590,464, Cl. 29-421.

Wilfert, Karl; and Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Installation for reducing the soiling of rear lights or the like at motor vehicle bodies. 3,591,229, Cl. 296-1.

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Winterhalter, Frank Arthur; and Raab, Ronald Buxton, to Johns-Manville Corporation. Filter construction for a fluid-solid separation. 3,591,580, Cl. 210-232.

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Wirtanen, Theodore E., to United States of America, Air Force. Offset screw driver with interchangeable heads. 3,590,895, Cl. 145-50.

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Wolfe, Denis G., to Robertshaw Controls Company. Heat motor safety valve construction and parts therefor. 3,591,138, Cl. 251-333.

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Woodburn, James, to Amsted Industries Incorporated. Method and apparatus for cooling graphite molds. 3,590,904, Cl. 164-126.

Woodhall, Brian John, to Imperial Chemical Industries Limited. Amalgam hydrodimerisation of organic compounds. 3,591,622, Cl. 260-465.8

Woodling, George V. Pressurized roller means in a fluid pressure device. 3,591,320, Cl. 418-61.

Woodling, George V. Valving in combination with fluid pressure operating means. 3,591,321, Cl. 418-61.

Woollen, Charles E.; and Boehlow, Robert W., to Multiplex Company. Remote-supply liquid dispensing system. 3,590,855, Cl. 137-375.

Woolsey, Samuel W., to Varian Associates. Starting and operating circuit for gas discharge lamps. 3,591,830, Cl. 315-290.

Worden, Donald A., to Marotta Valve Corporation. Construction for in-line pressure control valve. 3,590,847, Cl. 137-116.5

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Wright, Dennis; and Winkles, James T., to Harvey, Harold D. Method and apparatus for freeing wheels having disc brakes. 3,590,963, Cl. 188-152.

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Wustner, William E. Toilet tank flush valve apparatus. 3,590,395, Cl. 4-56.

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Yagi, Shizuo; Ishizuya, Akira; and Otani, Junji, to Honda Giken Kogyo Kabushiki Kaisha. Afterburner apparatus for engine exhaust gas. 3,590,578, Cl. 60-29.

Yaku, Tadao; Isizaki, Shogo; Fujiwara, Kunihiko; Ohzeki, Kazuya; and Yamaki, Tatsumi, to Japanese National Railways, and Nippon Electric Company, Limited. Load sensitive switching network system. 3,591,724, Cl. 179-18.

Yale, Harry Louis; Sowinski, Francis Alexander; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. Derivatives of dibenzoxazocine and dibenzthiazocine. 3,591,604, Cl. 260-327.

Yamaguchi, Hiroji; Murakami, Noboru; and Hirozawa, Koichiro, to Aisin Seiki Company Limited. Hydraulic pressure control means for automatic fluid speed change mechanism. 3,590,663, Cl. 74-867.

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Yamazaki, Takashi: *See—*
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Yoshida, Makoto; Oishi, Yasusuhi; and Tsuda, Momotoshi, to Fuji Photo Film Company, Ltd. Color photographic light sensitive material containing cyan coupler. 3,591,383, Cl. 96-74.

Yoshino, Takaohika; Saito, Shigeru; Sasaki, Yutaka; and Moriya, Kiyoshi, to Nitto Chemical Industry Co., Ltd. Process for producing acrylonitrile. 3,591,620, Cl. 260-465.3

Young, Einar T., to Sun Oil Company. Nozzle for liquid fuel dispensing apparatus. 3,590,890, Cl. 141-192.

Young, Norman G. Directly mailable device housing a magnetic recording medium. 3,591,066, Cl. 226-89.
Young, Stephen A. Lavatory spout construction. 3,590,876, Cl. 137-801.
Youngstown Sheet and Tube Company: *See*—
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Yuan, Shao Wen. Jet circulation control vehicle. 3,590,762, Cl. 114-66.5
Zander, Bernd: *See*—
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Zbinden, Ulrich Kaspar: *See*—
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Zeineh, Rashid A. Method for the treatment of biological fluids and apparatus therefor. 3,591,493, Cl. 210-22.
Zellweger, Ltd.: *See*—
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Zelnick, Seymour, to Weldotron Corporation. Method and apparatus for wrapping a pallet load. 3,590,549, Cl. 53-30.
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Zenk, William Edward, to Procter & Gamble Company, The. Liquid hard surface cleaning compositions. 3,591,510, Cl. 252-137.
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Zievers, James F.; and Novotny, Charles J., to Industrial Filter & Pump Mfg. Co. Ion exchange regeneration. 3,591,415, Cl. 127-14.
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Zinnow, Karl P.: *See*—
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Zion, Gilbert C.: *See*—
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Zonsveld, Johannes J.; and Salmons, Ronald Francis, to Shell Oil Company. Hydraulic cementitious compositions reinforced with fibrillated plastic film. 3,591,395, Cl. 106-99.
Zuech, Ernest A.: *See*—
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TO WHOM

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FMC Corp.: *See*—
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Appel, Mel, and M. Schur, to Gemco-Ware Inc. Timer. 221,098, 7–6–71, Cl. D42—7.

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Bassat S.A.: *See*—
Jerusalmi, Jose B. 221,121.

Beach, Daryl R., and S. Ota, to Kabushiki Kaisha Morita Seisakusho. Dental operating light. 221,103, 7–6–71, Cl. D48—20.

Bergman, Harry, to Butter Specialty Co. Console cabinet. 221,089, 7–6–71, Cl. D33—19.

Berkline Corp., The: *See*—
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Bethune, Ade, to Terra-Sancta Creations, Inc. Door knockers. 221,054, 7–6–71, Cl. D8—177.

Bidwell, Robert: *See*—
Kurtz, Leonard, Hallstein, Bidwell, and Mishkin. 221,113.

Bixby, Thomas G., to Phillips Drill Co., Inc. Stop rotation mechanism attachment. 221,048, 7–6–71, Cl. D8—70.

Boatel Co., Inc.: *See*—
Munter, Richard A. 221,070.

Bradley, W. C., Co.: *See*—
Gunnels, Peyton L. 221,112.

Brefka, Paul E., to Tyco Laboratories, Inc. Malfunction detector. 221,082, 7–6–71, Cl. D26—1.

Burglar Blast, Inc.: *See*—
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Butter Specialty Co.: *See*—
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Butz, Jack R., to John K. Selby. Building. 221,067, 7–6–71, Cl. D13—1.

Case, Stanley E., to Xerox Corp. Paper shredder. 221,108, 7–6–71, Cl. D55—1.

Cavitron Corp.: *See*—
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Chambers, Ernest H. Key tag. 221,118, 7–6–71, Cl. D87—8.

Container Corp.: *See*—
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Cragston Industries, Inc.: *See*—
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Dab-O-Matic Corp.: *See*—
Schwartzman, Gilbert. 221,076.

Daenen, Robert, to Dart Industries, Inc. Component for a multi-pieced block toy or the like. 221,092, 7–6–71, Cl. D34—15.

Dart Industries, Inc.: *See*—
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Seckel, Peter H., and Dick. 221,078.

Deknatel, Inc.: *See*—
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Dick, Franklin: *See*—
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Fossella, Gregory F., to Nortec Computer Devices, Inc. Stand for a computer printer. 221,086, 7–6–71, Cl. D33—3.

Gemco-Ware Inc.: *See*—
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Gold, Daniel. Protective mitt. 221,046, 7–6–71, Cl. D2—361.

Greenwood, Donald, to Cragston Industries, Inc. Toy automobile. 221,094, 7–6–71, Cl. D34—15.

Gunnels, Peyton L., to W. C. Bradley Co. Combined lamp and double grill. 221,112, 7–6–71, Cl. D81—10.

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Yasuhara, Nobuo, Tanaka, and Seki. 221,069.

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ISSUED JULY 6, 1971

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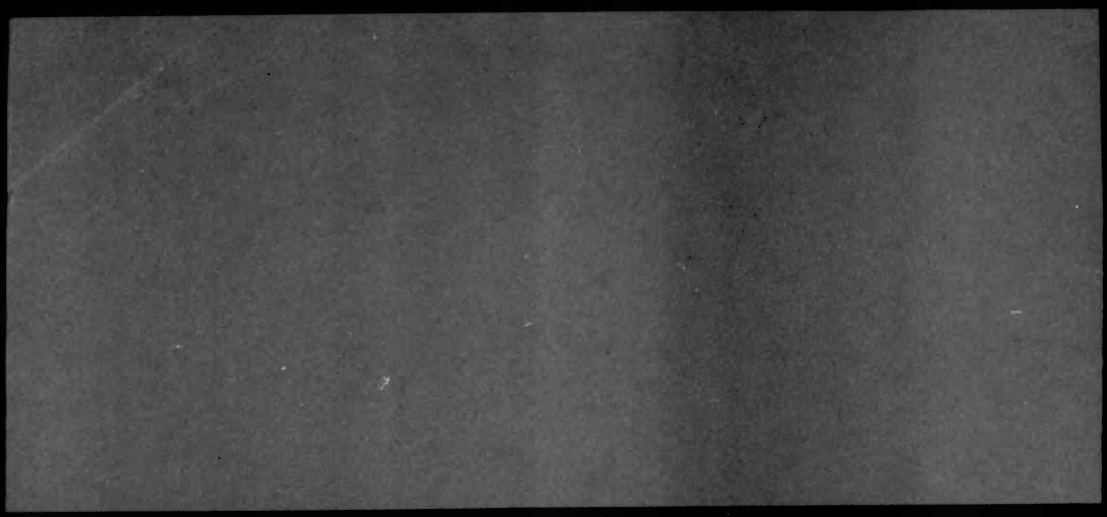

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